

2020 Census Program Management Review

Decennial Census Programs
U.S. Census Bureau

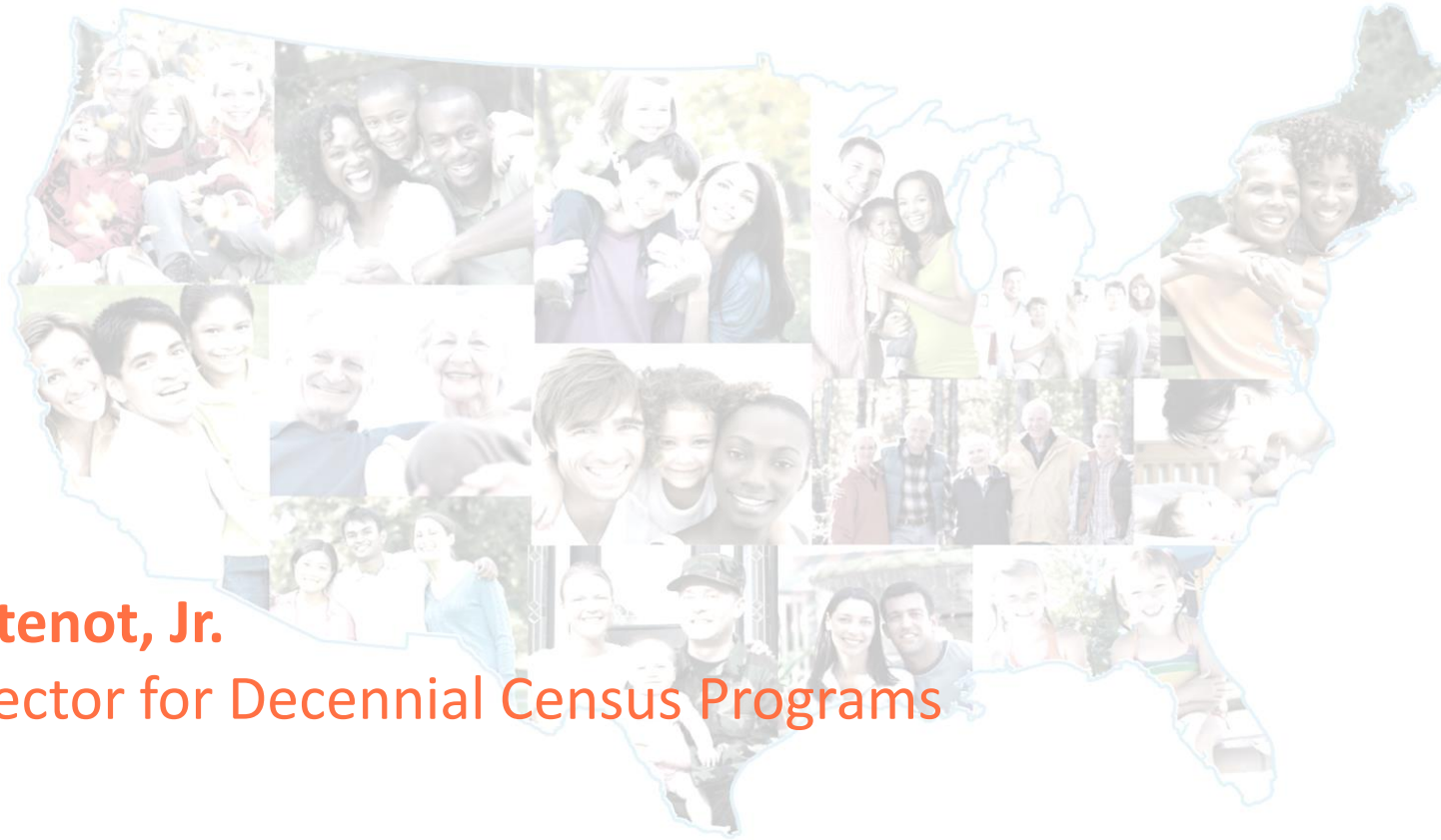
October 19, 2018



The original versions of slide 5, “Key Milestones” and slide 13, “Where are We Now” have been revised.

Welcome

Albert E. Fontenot, Jr.
Associate Director for Decennial Census Programs



Welcome

Housekeeping Items

- Meeting is being broadcast via a publicly available web broadcast
 - Consider all microphones live at all times when having sidebar conversations
- For questions, please remember to speak directly into the microphones for the benefit of other participants, including those watching via any external broadcast
 - 2020.census.pmr@census.gov
- There are legal requirements we must follow when talking with contractors or potential contractors
 - Information from Molly Shea, Assistant Division Chief, Acquisition Division
- Location of restrooms – next to elevators in green (just outside the auditorium)
- Emergency exits

Welcome

Today's Agenda

- Welcome and High-Level Program Updates
- 2018 End-to-End Census Test
- 2020 Census Operational Updates
- 2020 Census Systems Readiness Update
- Special Topics
 - Hard-to-Count Population
 - 2020 Census Disclosure Avoidance
 - Post-Enumeration Survey (PES)
- Wrap-Up

2020 Census

Key Milestones

Milestone	Date	
Begin 2020 Census Program	November 18, 2011	✓
Begin Local Update of Census Addresses (LUCA) Program	January 2017	✓
Deliver 2020 Census Topics to Congress	March 28, 2017	✓
Deliver 2020 Census Questions to Congress	By March 31, 2018	✓
Open Regional Census Centers	April 2018	✓
Conduct 2018 End-to-End Census Test	August 28, 2017 – August 31, 2018*	✓
Begin Opening Area Census Offices	January 7, 2019	
Begin In-Field Address Canvassing	August 19, 2019	
Launch Advertising Campaign	January 2020	
Begin Remote Alaska	January 21, 2020	
Begin Group Quarters – Advance Contact	February 3, 2020	
Begin Self-Response	March 16, 2020	
Begin Update Leave	March 16, 2020	
Begin Update Enumerate	March 16, 2020	
Begin Group Quarters – Service Based Enumeration	March 30, 2020	
2020 Census Day	April 1, 2020	
Begin Group Quarters Enumeration	April 2, 2020	
Begin Coverage Improvement	April 3, 2020	
Begin Early Nonresponse Followup	April 9, 2020	
Begin Nonresponse Followup	May 13, 2020	
Deliver Apportionment Counts to the President	By December 31, 2020	
Complete Delivery of Redistricting Counts to the States	By March 31, 2021	
Complete 2020 Census Program	September 29, 2023	

*Duration represents the time frame for data collection.

2018 End-to-End Census Test

At a Glance

All systems deployed and integrated effectively.

Response Rate

52.3%



We managed to have a **strong response** without an advertising campaign for the 2018 test.

More than half of all households responded to the test on their own (surpassing our goal for the test).

Technology and automation increased enumerator productivity.

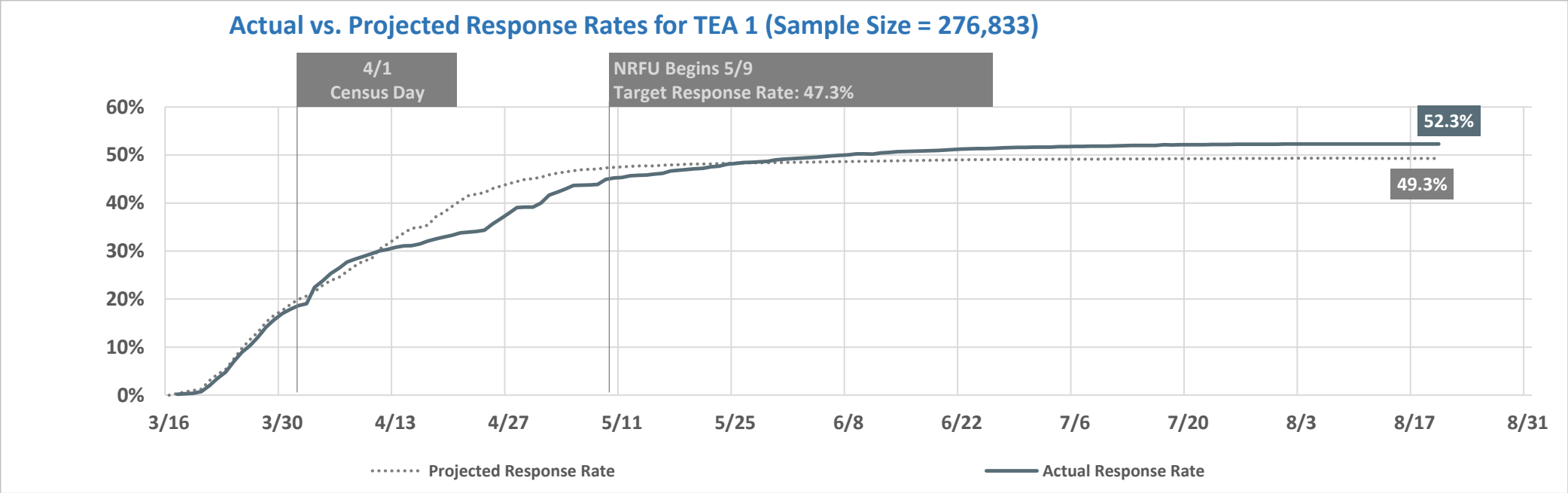


Those who did not respond to the mailed questionnaire on their own were visited by one of the **700+ census takers hired** for the 2018 Census Test.

Enumerators completed 1.56 cases per hour worked. This is a **remarkable improvement in productivity** compared with 2010, when enumerators completed 1.05 cases per hour worked.

2018 End-to-End Census Test

Self-Response of Housing Units: Final Summary Snapshot



Response by Mode				
	Self-Response (TEA 1)		Update Leave (TEA 2)	
	Response Volume	Percent of TEA 1 Total Responses	Response Volume	Percent of TEA 2 Total Responses
Total Responses	147,334	100.0%	663	100.0%
Internet	90,161	61.2%	209	31.5%
Phone	10,995	7.5%	27	4.1%
Paper	46,178	31.3%	427	64.4%

2018 End-to-End Census Test

Self-Response Mail Strategy

Self-Response

- Self-response contact strategy: two-panel design
- ~277k housing units in sample
- Internet Two-Panel Design:
 - ~195k (70.3 percent) Internet First (invitation letter on first contact)
 - ~82k (29.7 percent) Internet Choice (questionnaire on first contact)
- Language Two-Panel Design:
 - ~218k English (78.7 percent)
 - ~59k Bilingual: English/Spanish (21.3 percent)

March							April						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2	3	①	2	3	4	5	6	7
4	5	6	7	8	9	10	8	9	10	11	12	13	14
11	12	13	14	15	16	17	15	16	17	18	19	20	21
18	19	20	21	22	23	24	22	23	24	25	26	27	28
25	26	27	28	29	30	31	29	30					

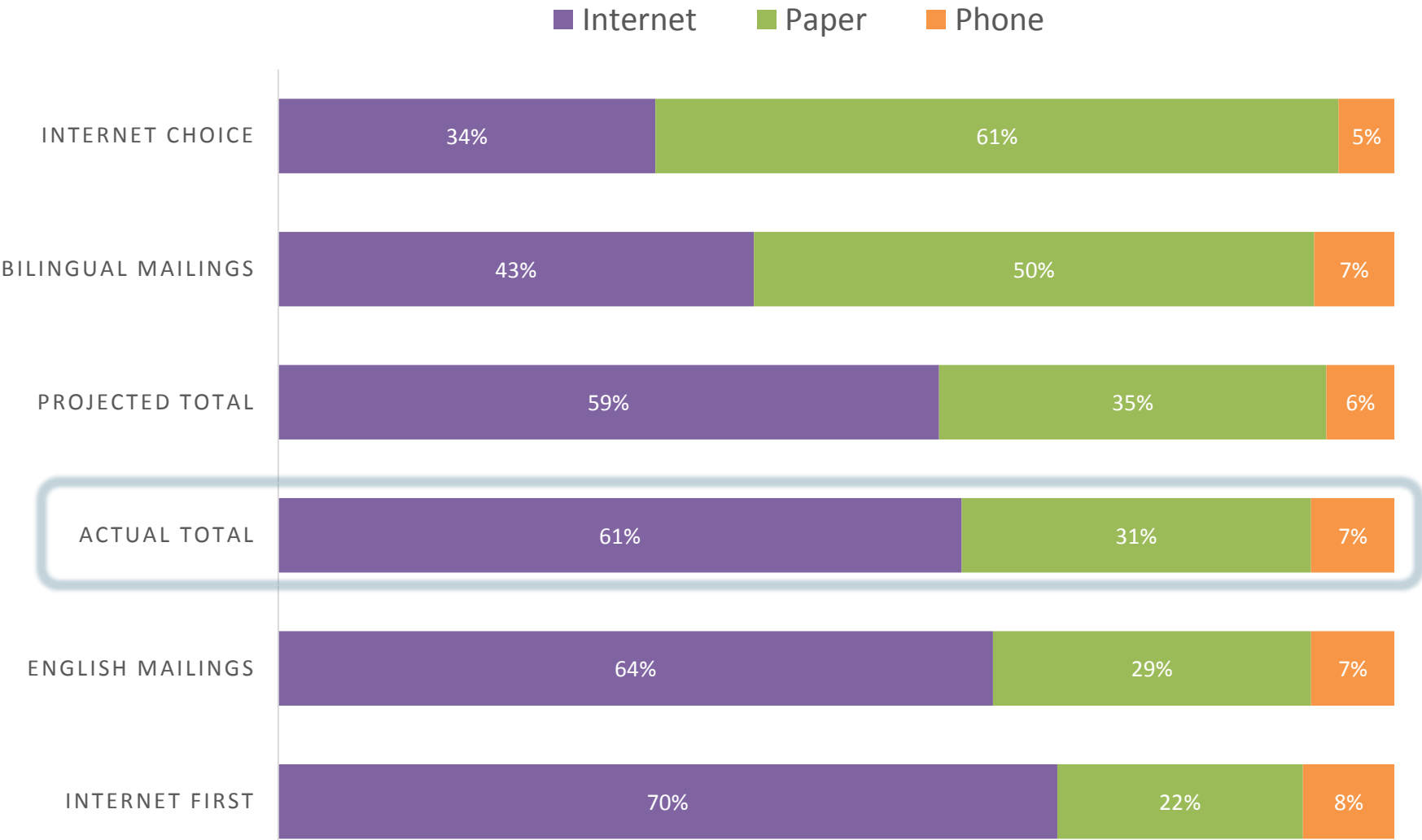
Dates in the table below are in-home dates.

Panel	Cohort	Mailing 1 <i>Letter (Internet First) or Letter + Questionnaire (Internet Choice)</i>	Mailing 2 <i>Letter</i>	Mailing 3* <i>Postcard</i>	Mailing 4* <i>Letter + Questionnaire</i>	Mailing 5* <i>"It's not too late" Postcard</i>
Total Volumes	<i>All</i>	276,589	276,589	250,140	198,924	187,467
Internet First	1	March 16, 2018	March 20, 2018	March 30, 2018	April 12, 2018	April 23, 2018
	2	March 20, 2018	March 23, 2018	April 3, 2018	April 16, 2018	April 26, 2018
	3	March 23, 2018	March 27, 2018	April 6, 2018	April 19, 2018	April 30, 2018
Internet Choice	N/A	March 16, 2018	March 20, 2018	March 30, 2018	April 12, 2018	April 23, 2018

(*) Targeted only to nonrespondents

2018 End-to-End Census Test

Proportion of Self-Response Modes by Panels and Mailing Groups*



*Self-response type of enumeration area (TEA 1) only.
Note: Actual Total percentages do not sum to 100 due to rounding.

2018 End-to-End Census Test

Operational Successes from the Test

Address Canvassing Success

- ✓ Successfully implemented our 2020 Census Address Canvassing approach to listing using our Listing and Mapping Application (LiMA)
- ✓ Successfully deployed a new, independent Quality Control operation for In-Field Address Canvassing
- ✓ Successfully realized increased field lister productivity

Update Leave Success

- ✓ Successfully implemented an approach to listing and leaving a Census ID-linked form package at every Housing Unit using the LiMA
- ✓ Successfully merged nonresponding housing units into the Nonresponse Followup operational workload

Printing and Mailing Success

- ✓ Successfully printed and distributed 3.2 million pieces of mail
- ✓ Successfully implemented a staggered mail strategy to multiple cohorts with conditional mailings to nonresponding households

Self-Response Success

- ✓ Successfully deployed multiple modes of self-response: Internet, Paper, and Telephone
- ✓ Successfully re-deployed an Internet Self-Response data collection instrument in English and Spanish
- ✓ Successfully stood up a Paper Data Capture operation integrating and utilizing a new scanner
- ✓ Successfully fielded questions via Census Questionnaire Assistance (CQA), offering respondents and opportunity to provide their responses to Customer Service Representatives

2018 End-to-End Census Test

Operational Successes from the Test (continued)

Census Questionnaire Assistance Success

- ✓ Successfully built out, fitted, and decommissioned call centers in Jacksonville, Florida and Sandy, Utah
- ✓ Successfully supported in-bound calls for assistance and self-response, outbound calling for the Coverage Improvement Operation, and outbound calling for the Nonresponse Followup Reinterview
- ✓ Successfully supported calls in nine languages: English, Spanish, Mandarin, Cantonese, Russian, Arabic, Tagalog, Korean, and Vietnamese

Nonresponse Followup Success

- ✓ Successfully implemented a field data collection enumeration application loaded onto iPhones to conduct interviews
- ✓ Successfully identified and removed vacant/delete cases from the workload prior to any field contact attempts
- ✓ Successfully identified Administrative Records Occupied cases and removed cases from the workload after one NRFU contact attempt

Recruiting and Hiring Success

- ✓ Successfully deployed and used the online job application and assessment for peak operations
- ✓ Successfully recruited 2,027 applications in support of Address Canvassing and 3,060 applicants in support of Peak Operations (Update Leave, Nonresponse Followup, and Group Quarters)
- ✓ Successfully completed fingerprint collection and background checks for all temporary field and office staff

Group Quarters Success

- ✓ Successfully demonstrated the integration of systems supporting a paper-based operation
- ✓ Successfully conducted the Service-Based Enumeration using two methods (in-person interviews and paper listing)
- ✓ Successfully demonstrated a variety of enumeration methods can be utilized for Group Quarters Enumeration

2020 Census

Moving from the 2018 End-to-End Census Test to the 2020 Census

Self-Response

- Performance and scalability across all systems
- Internet Self-Response (ISR)
 - Add languages to the ISR instrument, expanding to 13 languages (English, Spanish, Chinese, Vietnamese, Korean, Russian, Arabic, Tagalog, Polish, French, Haitian Creole, Portuguese, Japanese)
- Census Questionnaire Assistance (CQA)
 - Expand required language support to 13 languages
 - Determine locations of commercial contact center facilities
- Paper Data Capture (PDC)
 - Open two Paper Data Capture Centers (East & West)
- Forms Printing and Distribution (FPD)
 - Select print vendor
 - Create connection between the Census Bureau and the print vendor for the transmission of address files

Nonresponse Followup

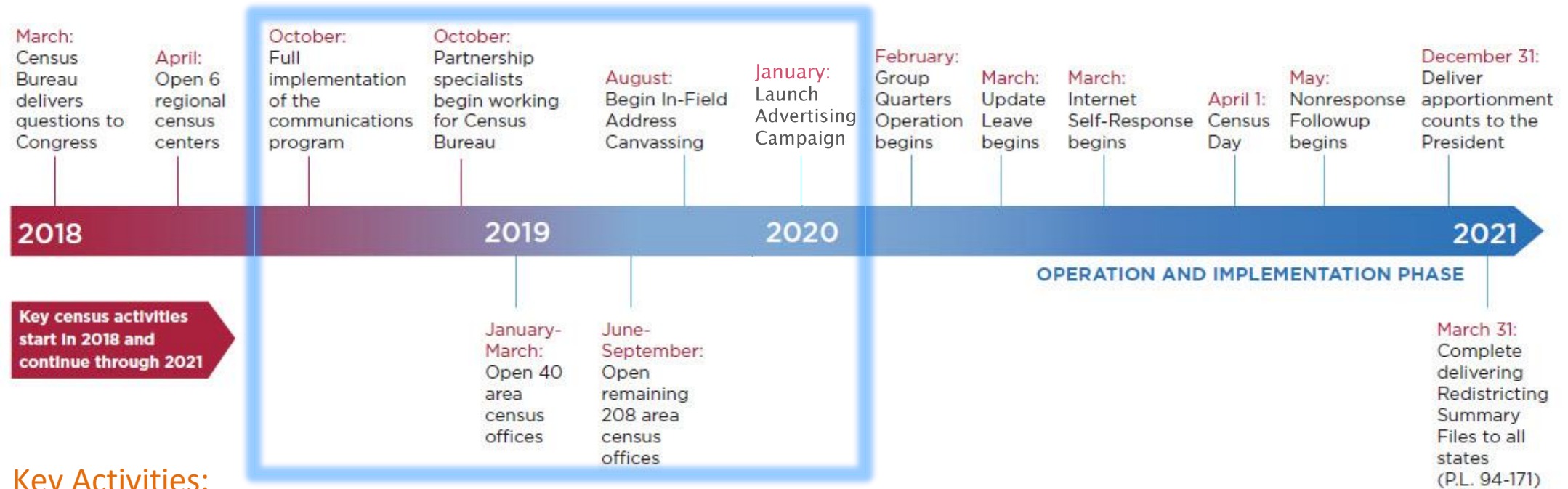
- Performance and scalability across all systems
- Mapping Application
- New work availability functionality
 - submitting multiple time slots in a day
- Additional reports (FOCS and UTS) for monitoring the operation
- Puerto Rico adaptations and updates
- Refine closeout execution

Group Quarters

- Expand Advance Contact approach to account for GQs that can not be contacted during that period
- Refine contact strategy to encourage eResponse
- Develop additional guidance for eResponse letters to assistance GQ administrators

2020 Census

Where are We Now



Key Activities:

- Local Update of Census Addresses (LUCA)
- Boundary Annexation Survey
- Redistricting Data Program
- Complete Count Committees
- Community Partnership and Engagement Program
- National Partnership Program
- Communications Program Planning
- Recruiting
- Area Census Offices (ACOs) Leasing

2020 Census

2020 Census Operational Updates

Local Update of Census Addresses (LUCA)

- LUCA is fully underway. More than 70% (8,321) of the participating governments have sent their submissions thus far.
- This covers 95% of the population and 95% of the housing.

Boundary and Annexation Survey

- The response rate for the 2018 Boundary and Annexation Survey (BAS) is close to 90 percent, surpassing the goal of reaching an 85 percent response by the end of the fourth quarter. Of the 34,715 responding governments, 90 percent had no changes to report.
- The annual BAS is used to update information about the legal boundaries and names of all governmental units.

Redistricting Data Program

- The Redistricting Data Program (RDP) staff are assisting the Geography Division with its final quality control of voting district boundary insertion in the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) system, as part of the “Phase 2 - The Voting District Project.”
- RDP staff are also testing Geographic Update Partnership Software (GUPS), which will be sent to state partners in January 2019 and used to verify their voting district boundaries and submit new updates as needed.

2020 Census

2020 Census Operational Updates (Continued)

Complete Count Committees

- State Complete Count Committees (CCCs) are underway with 38 states or state-equivalents having formed 2020 Census CCCs and an additional 11 considering to form committees.
- In addition to the state CCCs, significant work is being done to establish CCCs at the county and city level. We have established 468 local CCCs nationwide, including 37 tribal CCCs.
- We have contacted 3,619 organizations via our local partnership specialists and have completed 4,855 awareness and education events.

Community Partnership and Engagement Program

- The Census Bureau is on track toward meeting the goal of hiring 1,501 partnership specialists by June 30, 2019; these partnership specialists will work out of the six regional census centers (RCCs).
- The RCCs have hired 172 partnership specialists, approaching our December 1 goal of 176 partnership specialists.

National Partnership Program

- The 2020 Census National Partnership Program has identified 453 “keystone partners”. Keystone partners are an initial group of national organizations being approached to support the 2020 Census.
- So far, 83 of these organizations have agreed to become a national partner, including some of high-profile organizations like Facebook and Google. An additional 99 organizations have expressed interest.

2020 Census

2020 Census Operational Updates (Continued)

Communications Program Planning

- The Census Barriers, Attitudes, and Motivators Survey (CBAMS) is complete and the data are being analyzed. We are working with our contracting team to begin development for the media plans, messaging, and creative treatments.
- Census staff are currently finalizing the review of proposals for the Creative, Media, Web and Digital, Partnerships and Statistics in Schools orders.

Recruiting

- The Field Recruitment Webpage went live on September 4, allowing the public to review and apply for positions in the six Regional Census Centers and the 40 early opening Area Census Offices. This will also get applicants into the hiring pool for the Address Canvassing listing positions.

Area Census Offices (ACOs) Leasing

- Lease awards have been granted to all 40 Wave 1 ACOs, all 40 have complete design intent drawings and complete construction drawings. They are all scheduled to open between January and March 2019.
- The 208 Wave 2 offices were scheduled to have leases awarded by October 15, and to open between June and September 2019. All 208 have space identified. As of October 15, 171 of the Wave 2 ACOs have an occupancy agreement signed, and of those, 157 have leases awarded. So far, 46 of the Wave 2 ACOs have complete design intent drawings and 8 have complete construction drawings.

2020 Census

Major Contracts*

Contract Status

Awarded

Pre-Award

Technical Integrator Vendor: T-REX Solutions, LLC (17 subcontractors)

Ensures 2020 Census System of Systems (SoS) integrates, performs, scales, is secure, and meets business objectives.
Provides 2020 Census Cloud and On Premise Infrastructure.
Provides systems integration and testing.

CEDCaP - ECaSE Vendor: ImmixGroup/Pega (subcontractor)

ECaSE development services support new data collection systems. These systems support the operational control systems for Address Canvassing and Nonresponse Followup, and the data collections systems for Nonresponse Followup and Self-Response which includes internet and telephone.

Decennial Device as a Service (dDaaS) Vendor: CDW-G (8 subcontractors)

Provides Mobile Devices for Field Data Collection Operations.
Software Integration, Cellular, Logistics, Shipping, Asset Management, Break/Fix and Disposition.

Field IT Deployment (FITd) Vendor: Unisys Corporation

Provides the IT infrastructure for 2020 Census field sites.
IT & Telecommunications Hardware, Image Integration, Logistics, Shipping, Installation, Break/Fix and Disposition.
Regional Census Centers
Area Census Offices
Island Area Censuses Offices
Paper Data Capture Centers

Census Questionnaire Assistance (CQA) Vendor: GDIT (10 subcontractors)

Provides call center capability for self-response, assist respondents with responding to and completing census questionnaire, and provides Interactive Voice Response.

C-SHaRPS – Recruiting & Selection Vendor: CSRA (5 subcontractors)

Provides recruiting and selection and Learning Management System COTS for up to 400K concurrent Schedule A Field Staff.

Integrated Communications Vendor: Y&R (19 Subcontractors)

Supports the advertising and partnership program.

C-SHaRPS Fingerprinting Vendor: IndraSoft, Inc

Provides fingerprinting services for field staff.

2020 Census Print and Mail Vendor: TBD

Provides the majority of printing and mailing services for the 2020 Census.

Note: Decennial Service Center (DSC) is removed from DCEO contracts and functions will be fulfilled by other areas

2020 Systems Readiness

Atri Kalluri

Decennial Information Technology Division

2020 Census Systems Readiness

Agenda

- Update on 2018 End-to-End Census Test
- Key Lessons Learned from the 2018 End-to-End Census Test
- Update on 2020 Census Operational Deliveries
- Systems Readiness for 2020 Census

2020 Census Systems Readiness

2018 End-to-End Census Test

Ongoing Operation and Future Release

Release (Operation)	Conduct Operation Date
Response Processing	October 1, 2018
Tabulation, Product Creation, and Dissemination	January 7, 2019

2020 Census Systems Readiness

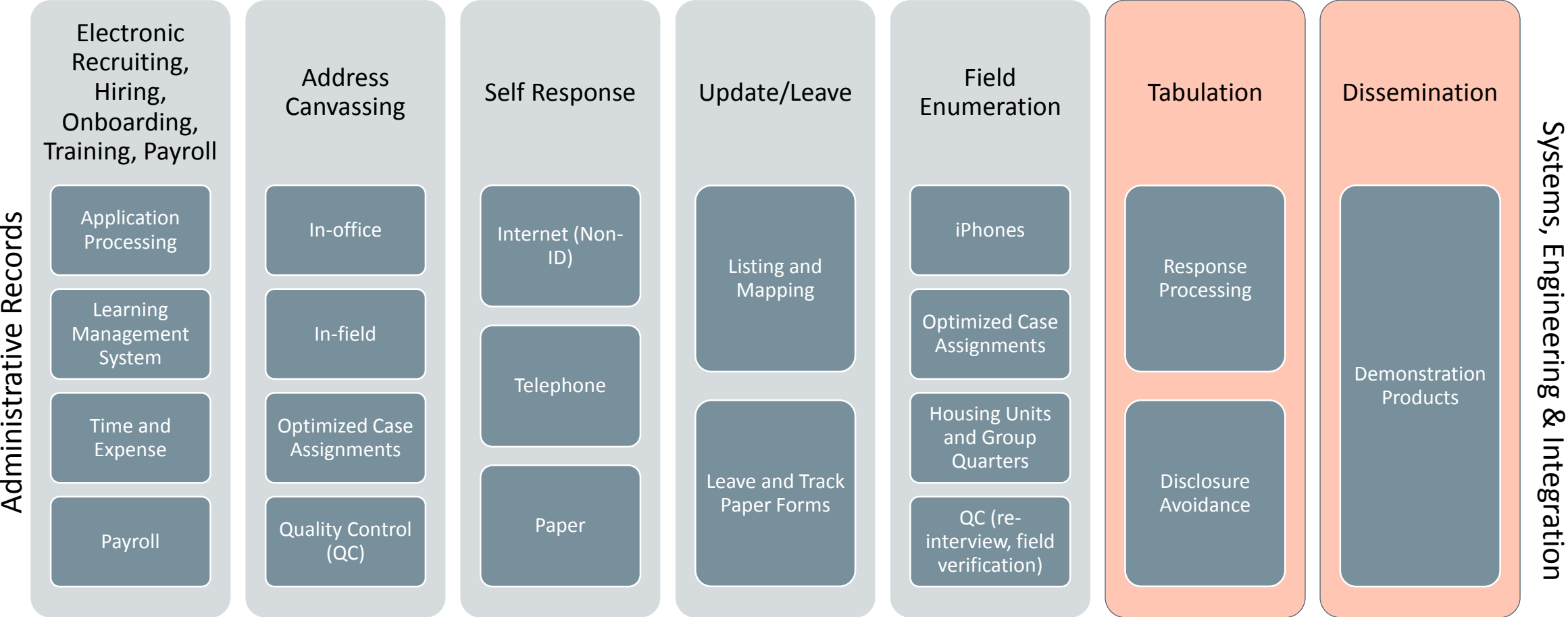
2018 End-to-End Census Test

Key Systems Supporting Ongoing Operation and Future Release

Operation (Release)	Key Systems Supporting Operation
Response Processing	CDL, DRPS, SRQA, PEARSIS
Tabulation, Product Creation, and Dissemination	CaRDS, CDL, CEDSCI, DRPS, MAF/TIGER, PEARSIS, Tabulation, SOA

2018 End-to-End Census Test

Key Functions Supported by Systems



Cloud, Data Center, Cybersecurity, Field Deployment, Operations Center(s)

2020 Census Systems Readiness

2018 End-to-End Census Test

Key Lessons Learned

- Solve issues related to data integration between systems earlier
- Ensure all data transactions and cases are accounted for within the operational design
- Implement robust testing of all scenarios, including exception paths
- Additional preparation needed for smooth execution of field training and launch of operations

2020 Census Systems Readiness

2018 End-to-End Census Test

Actions Based On Key Lessons Learned

- Solve issues related to data integration between systems earlier

ACTION: Developed and executing a plan for achieving *data lineage* for key data categories and operations

- Ensure all data transactions and cases are accounted for within the operational design

ACTION: Accounting through SOA capabilities and software as needed

- Implement robust testing of all scenarios including exception paths

ACTION: The framework of the Testing program expanded to include additional test phases

- Additional preparation needed for smooth execution of field training and launch of operations

ACTION: Building soft launches for every significant 2020 Census operation

2020 Census Systems Readiness

2020 Census Operational Deliveries

2020 CENSUS OPERATIONAL DELIVERY		Test Readiness Review	Production Readiness Review	Conduct Operation
D1	2020 Census Early Ops Preparation	07/23/2018	10/19/2018	10/23/2018
D2	Address Canvassing	01/04/2019	05/17/2019	08/19/2019
D3	Peak Recruiting & Hiring	01/18/2019	06/07/2019	09/03/2019
D4	Self-Response	06/28/2019	12/13/2019	03/09/2020
D5	Integrated Partnership and Communications (IPC)	05/17/2019	11/01/2019	01/15/2020
D6	Count Review (CR) & Remote Alaska (RA)	05/10/2019	10/25/2019	01/21/2020
D7	Group Quarters Advance Contact (GQAC) & ETL Advance Contact (ETL AC) & Federally Affiliated Count Overseas (FACO)	05/24/2019	11/08/2019	02/03/2020
D8	GQ Enumeration (GQE) & Service Based Enumeration (SBE) & Enumeration at Transitory Locations (ETL)	06/17/2019	12/06/2019	02/24/2020
D9	Update Enumerate (UE) & Update Leave (UL)	07/12/2019	01/03/2020	03/16/2020
D10	Nonresponse Followup (NRFU)	07/19/2019	01/17/2020	04/09/2020
D11	Archiving & Count Question Resolution (CQR)	09/18/2020	03/05/2021	06/01/2021
D12	Response Processing	04/27/2020	06/17/2020	09/15/2020
D13	Data Products / Dissemination	06/15/2020	10/05/2020	11/25/2020
D14	Redistricting	08/28/2020	12/18/2020	02/17/2021
D15	Post Enumeration Survey (PES)	03/05/2021	05/28/2021	07/23/2021
D16	Island Areas	10/16/2020	04/02/2021	06/30/2021

2020 Census Systems Readiness
2020 Census Operational Deliveries
Early Operations Preparation

9 systems are in production and are supporting recruiting operation since 09/04/18

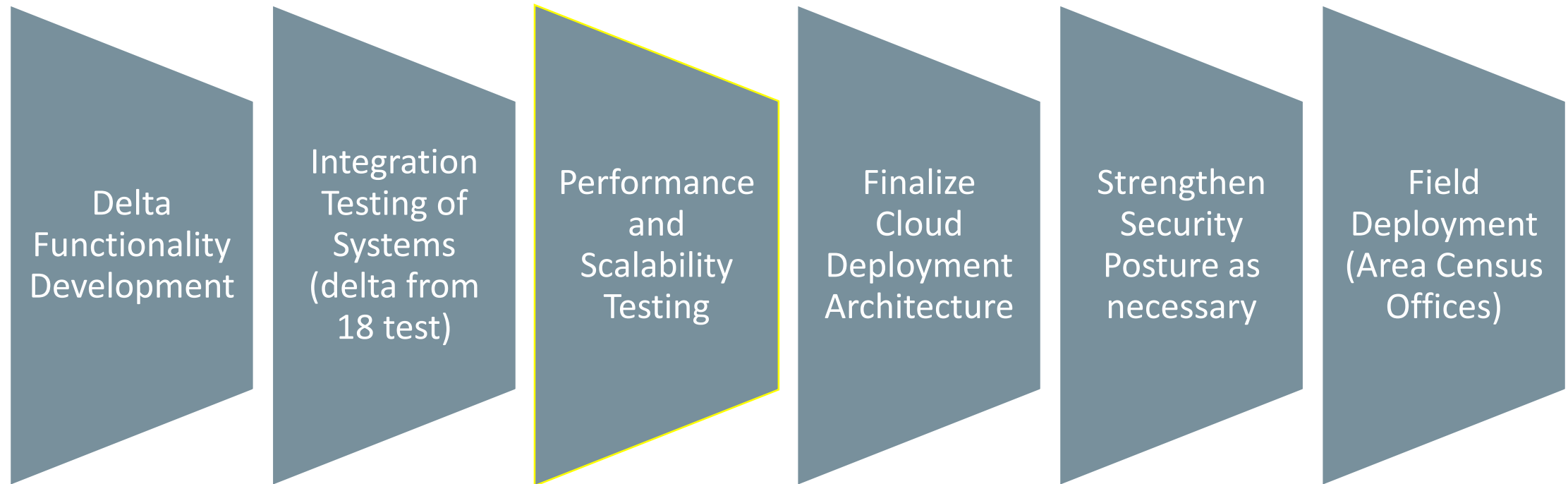
2020 Website, CDL, CRM, DAPPS, MAF/TIGER, [MOJO Field Processing](#), R&A, SOA, UTS

11 more systems will go live on 10/23/18 to support selection, hiring, and training

ATAC, CBS, CENDOCs, CHEC, CHRIS, Desktop Services, DPACS, DSC, Field OCS, iCADE, IDMS

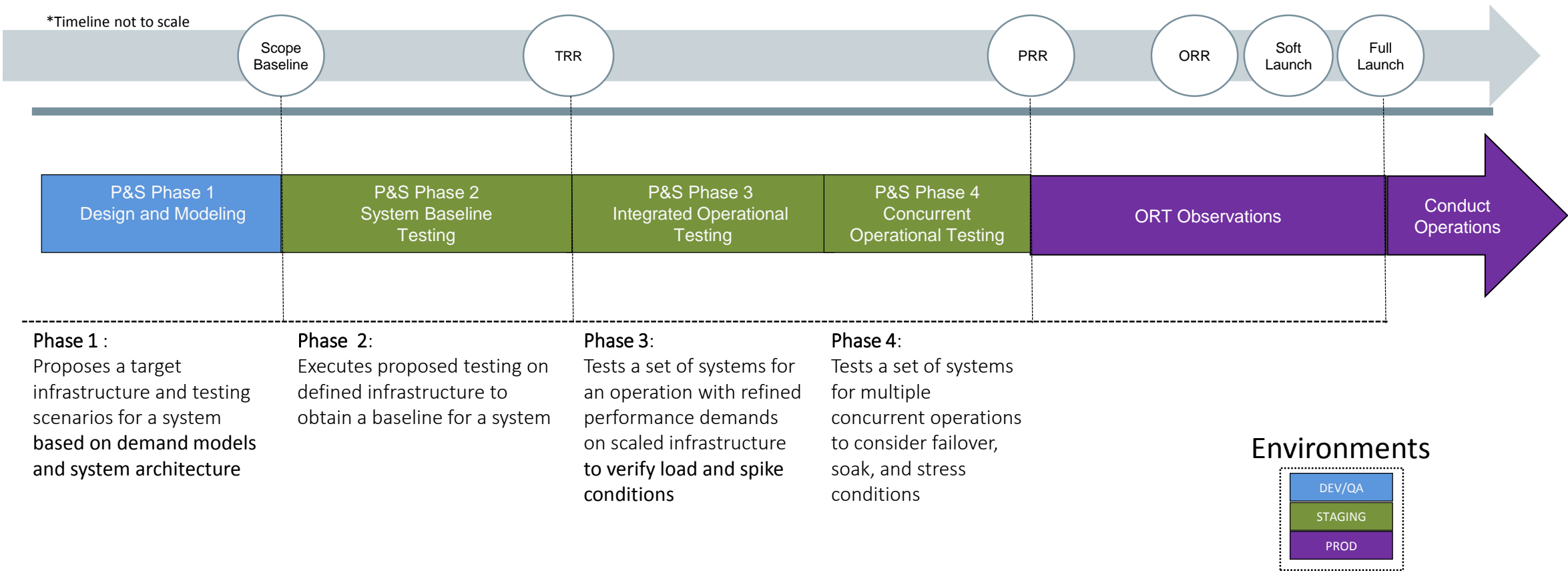
2020 Census Systems Readiness

Systems Readiness for 2020 Census– Remaining Key Work



2020 Census Systems Readiness

Performance & Scalability Framework Overview



QUESTIONS?

Back Up Slides

2020 Census Systems Readiness

2020 Census Systems List

	System	Description
1	2020 Website	2020 website provides a public web interface and allows partners to publish content.
2	ATAC (Automated Tracking and Control)	ATAC provides customer, employee, and workflow management. It also provides outbound call tracking for Geographic Partnership Programs and material tracking and check-in.
3	BARCA (Block Assessment, Research, and Classification Application)	BARCA is an interactive review tool, which is designed to assist an analyst in assessing present, past, and future housing units for a set of geographic work units. It is used for in-office address canvassing.
4	CAES (Concurrent Analysis and Estimation System)	CAES is a high speed processing environment used to make fast decisions during the data collection phase of the Census.
5	CaRDS (Control and Response Data System)	CaRDS provides sample design and universe determination.
6	CBS (Commerce Business System)	CBS is an electronic financial tracking and approval system. CBS collects and reports labor hours and costs for activities that the National Processing Center (NPC) performs.
7	CDL (Census Data Lake)	CDL serves as the repository for paradata and response data. It is built on a distributed, scalable platform to support data ingest, storage, and access for reporting and analytics applications.
8	CEDSCI (Center for Enterprise Dissemination Services and Consumer Innovation)	CEDSCI is an enterprise dissemination platform with search capability and access to surveys and censuses data.
9	CEM (Customer Experience Management)	CEM is an enterprise platform, which is used to provide dashboards providing insight into customer-focused performance metrics.
10	CENDOCS (Census Document System)	CENDOCS is a web-based system for requesting forms design services, publications and graphics services, and printing services which includes CD-ROM replication.
11	Centurion	Centurion provides for the upload of GQ eResponse data, LUCA address updates, and FACO data.

2020 Census Systems Readiness

2020 Census Systems List

	System	Description
12	CHEC (Census Hiring and Employment Check System)	CHEC is an administrative system that automates clearance processing of all personnel at the Census Bureau Headquarters, the Bureau of Economic Analysis (BEA), the Regional Offices (ROs), the National Processing Center (NPC), and Computer Assisted Telephone Interview (CATI) sites. This system supports fingerprint processing with the Federal Bureau of Investigation (FBI), the Office of Personnel Management (OPM), the Department of Homeland Security (DHS), the Office of Management and Budget (OMB), and the Department of Commerce (DOC).
13	CHRIS (Census Human Resources Information System)	CHRIS is a web-based personal information tool which provides personnel and payroll information on desktops. It creates a contact file for the Emergency Notification System (ENS).
14	CIRA (Census Image Retrieval Application)	CIRA stores decennial census images as well as raw and edited data. It provides a user interface for reviewing the images and data and is used for age match research at NPC.
15	CQA (Census Questionnaire Assistance)	CQA is a system that collects response data through inbound respondent-initiated calls, assists respondents with completing their questionnaires, including capturing their responses over the phone, and answering questions. CQA also provides outbound calling and data capture for reconciliation of response inconsistencies and follow-up QC operations.
16	CRM (Customer Relationship Management)	CRM is a suite of applications that provide the management of partnership activities, and case management for customer service.
17	DAPPS (Decennial Applicant, Personnel and Payroll Systems)	DAPPS is the system of record for the C-SHaRPS system of systems. It supports selection, hiring, personnel actions, time and expense processing, and payroll administration for temporary Census Bureau employees.
18	Desktop Services	Desktop Services is a set of office automation applications and tools for field office staff and remote workers.
19	DMP (Data Management Platform)	DMP provides centralized data analytics service to support decision-making for the Census advertising campaign.
20	DRPS (Decennial Response Processing System)	DRPS provides autocoding, clerical coding, data editing, and imputation for the post-data-collection response processing.
21	DPACS (Decennial Physical Access Control System)	DPACS maintains information relating to physical access control to facilities.

2020 Census Systems Readiness

2020 Census Systems List

	System	Description
22	DSC (Decennial Service Center)	DSC is the help desk service for field representatives.
23	ECaSE Enum (Enterprise Censuses and Surveys Enabling Platform – Enumeration)	ECaSE Enum supports field enumeration, provides the employee availability, and time & expense capabilities.
24	ECaSE FLD OCS (Enterprise Censuses and Surveys Enabling Platform – Field Operational Control System)	ECaSE FLD OCS manages field assignments and leverages the Optimizer for routing field staff to and between assignments.
25	ECaSE ISR (Enterprise Censuses and Surveys Enabling Platform – Internet Self-Response)	ECaSE ISR supports self-response data collection via the Internet. It also supports data collection by call center agents.
26	ECaSE OCS (Enterprise Censuses and Surveys Enabling Platform – Operational Control System)	ECaSE OCS manages the data collection case history for all enumeration operations and maintains operational workloads as data collection proceeds.
27	Geospatial Services	Geospatial Services provide mapping and imagery services.
28	GUPS (Geographic Update Partnership Software)	GUPS allows partners to provide geographic data updates.
29	iCADE (Integrated Computer Assisted Data Entry)	iCADE captures and tracks respondent information from scanned paper questionnaires. The iCADE system processes digital images of respondent questionnaires through three functions. Optical Mark Recognition (OMR) automatically detects and captures checkmark responses. Optical Character Recognition (OCR) automatically captures the presence of pre-selected numeric answer fields. Key From Image (KFI) directs keyers to all pre-identified, non-OCR write-in answer zones for keying hand-written data.
30	IDMS (Identity Management System)	IDMS provides enterprise authentication, authorization, identity, and access management.

2020 Census Systems Readiness

2020 Census Systems List

	System	Description
31	ILMS (Integrated Logistics Management System)	ILMS is used to manage logistics and resource planning.
32	IPTS (Intelligent Postal Tracking System)	IPTS is a mail tracking system that traces individual mail pieces through the USPS mailstream.
33	LiMA (Listing and Mapping Application)	LiMA provides address and map feature collection in support of surveys and censuses.
34	MaCS (Matching and Coding Software)	MaCS provides interactive clerical matching and coding. This application supports Non-ID processing.
35	MAF/TIGER (Master Address File/Topologically Integrated Geographic Encoding and Referencing Database)	MAF/TIGER is a repository of spatial and address data and is used to provide spatial and address products and services in support of survey and census operations.
36	MCM (Mobile Case Management)	MCM provides mobile device-level survey case management.
37	MOJO Optimizer/Modeling	MOJO Optimizer/Modeling is a route optimizer for field case assignments.
38	MOJO Field Processing	MOJO Field Processing provides a dashboard for recruiting and performance reports.
39	NPC Printing (Printing at the National Processing Center)	NPC Printing provides printing services.
40	OneForm Designer Plus	OneForm Designer Plus is a tool used to create paper forms including decennial questionnaires, letters, envelopes, notice of visit, language guides, and other decennial field and public materials.
41	PEARSIS (Production Environment for Administrative Records, Staging, Integration, and Storage)	PEARSIS manages administrative records and services associated with these records.

2020 Census Systems Readiness

2020 Census Systems List

	System	Description
42	PES Clerical Match and Map Update (Post-Enumeration Survey - Clerical Matching System and Map Update)	PES Clerical Match and Map Update provides clerical address and person matching, and residential unit location updates to support the Coverage Measurement operation.
43	PES Imputation and Estimation (Post-Enumeration Survey - Imputation and Estimation System)	PES Imputation and Estimation provides coding, imputation of responses, and estimation of coverage for the Coverage Measurement operation.
44	PES PCS (Post-Enumeration Survey - Processing and Control System)	PES PCS provides sampling, automated matching, and workload control for the Coverage Measurement operation.
45	R&A (Recruiting and Assessment)	R&A provides online job application capability for temporary positions, online training, and applicant pre-selection assessments.
46	RTNP (Real Time Non-ID Processing)	RTNP standardizes, matches, and geocodes addresses in real-time.
47	SMaRCS (Sampling, Matching, Reviewing, and Coding System)	SMaRCS applies quality control algorithms to the field address canvassing and enumeration operations.
49	SOA (Service Oriented Architecture)	SOA, along with the enterprise service bus, is a web service infrastructure that facilitates data transport, communication, and integration of systems.
49	SRQA (Self-Response Quality Assurance)	SRQA identifies fraudulent cases of self-response using analytical models.
50	Tabulation (Decennial Tabulation System)	Tabulation produces tabulated response data for redistricting and other purposes.
51	UTS (Unified Tracking System)	UTS provides operational and cost & progress reports.
52	WebTQA (Web Telephone Questionnaire Assistance)	WebTQA provides telephone assistance for Geographic Partnership Programs.

2020 Census: Counting Everyone Once, Only Once, and in the Right Place

A Design for Hard to Count Populations

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Decennial Census Programs Directorate

2020 Census: Counting Everyone Once, Only Once, and in the Right Place

A Design for Hard to Count Populations

Decennial Census Purpose:

To conduct a census of population and housing and disseminate the results to the President, the States, and the American People

Primary Uses of Decennial Census Data:

- Apportion representation among states as mandated by Article 1, Section 2 of the United States Constitution:

*Representatives and direct Taxes shall be apportioned among the several States which may be included within this union, according to their respective Numbers ... The actual Enumeration shall be made within three Years after the first Meeting of the Congress of the United States, and **within every subsequent Term of ten years**, in such Manner as they shall by Law direct.*

- Draw congressional and state legislative districts, school districts and voting precincts
- Enforce voting rights and civil rights legislation
- Distribute federal dollars to states
- Inform federal, tribal, state, and local government planning decisions
- Inform business and nonprofit organization decisions (e.g., where to locate, size of the market)
- Provide population benchmark for nearly every other United States survey

2020 Census: Counting Everyone Once, Only Once, and in the Right Place

A Design for Hard to Count Populations

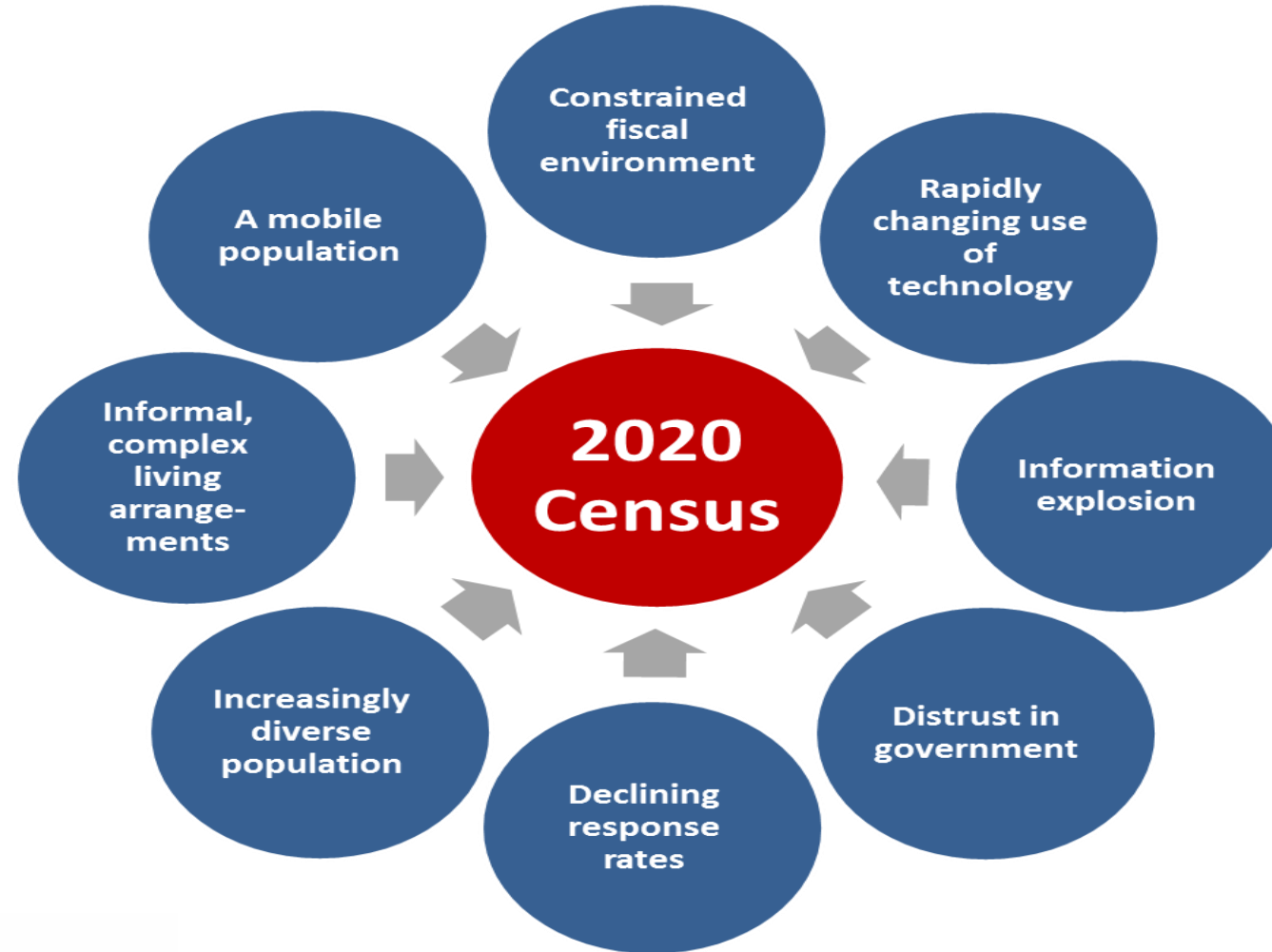
A Complete and Accurate Count of the
Population and Housing



2020 Census: Counting Everyone Once, Only Once, and in the Right Place

2020 Census Environment

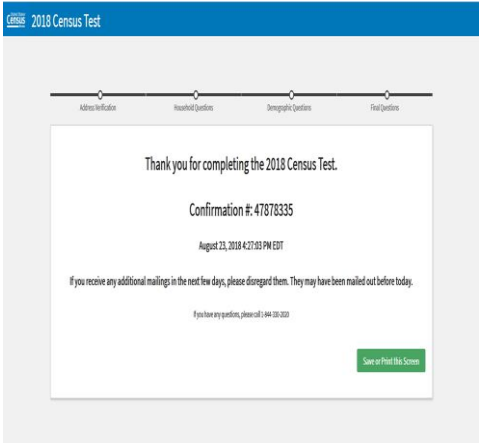
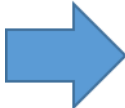
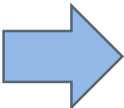
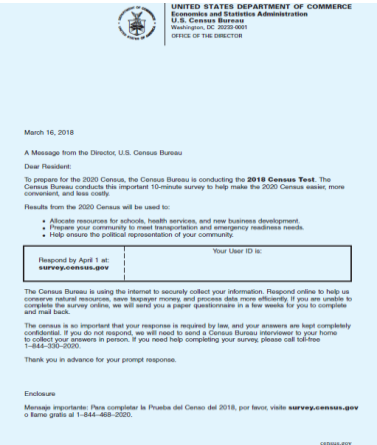
The 2020 Census is being conducted in a rapidly changing environment, requiring a flexible design that takes advantages of new technologies and data sources while minimizing risk to ensure a high quality population count.



2020 Census: Counting Everyone Once, Only Once, and in the Right Place

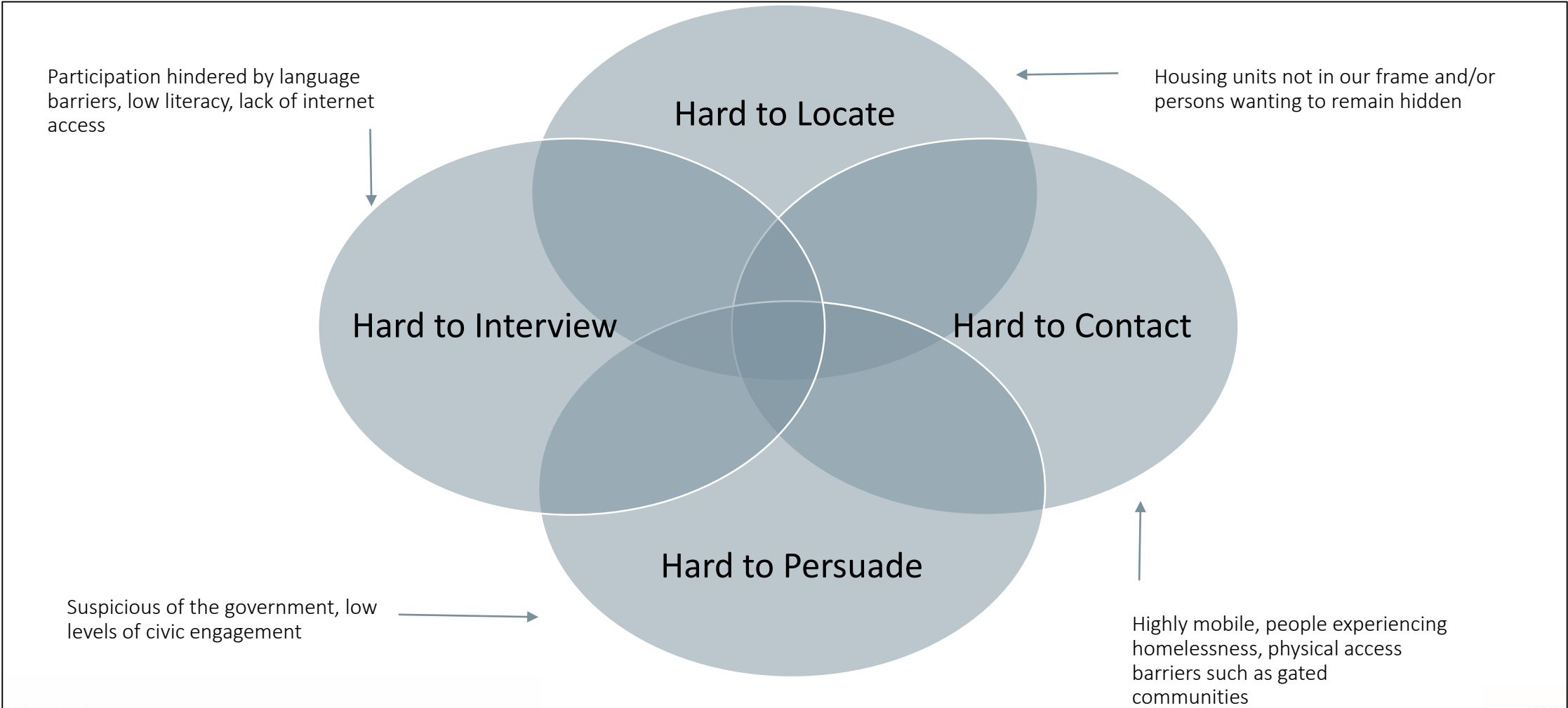
A Design for Hard to Count Populations

2020 Census: The Ideal Path



2020 Census: Counting Everyone Once, Only Once, and in the Right Place

A Framework for Hard-to-Count Populations¹



¹ Tourangeau, R. 2014. "Defining Hard-to-Survey Populations."

2020 Census: Counting Everyone Once, Only Once, and in the Right Place

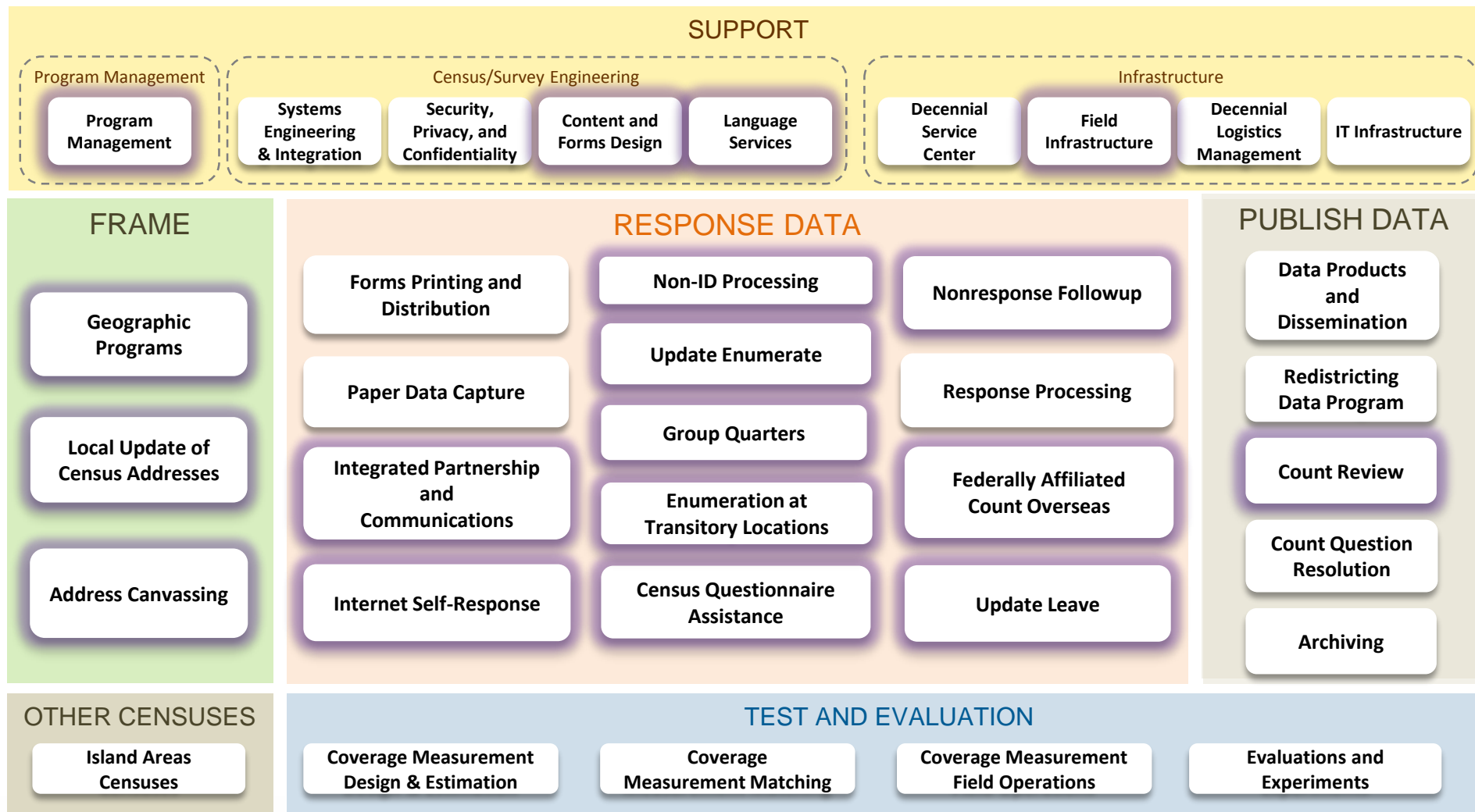
A Look at the Hard-to-Count Populations*

- Young children
- Highly mobile persons
- Racial and ethnic minorities
- Non-English speakers
- Low income persons
- Persons experiencing homelessness
- Undocumented immigrants
- Persons who distrust the government
- LGBTQ persons
- Persons with mental or physical disabilities
- Persons who do not live in traditional housing

*Not an Exhaustive List

2020 Census: Counting Everyone Once, Only Once, and in the Right Place

Operations Supporting an Integrated Hard to Count Design



2020 Census: Counting Everyone Once, Only Once, and in the Right Place

Integrated Design for Hard to Count Populations: Stakeholder Communication/Engagement

Objectives: Early and regular engagement to discuss the operational design for the decennial census. To hear, understand, and address opportunities and challenges pertaining to Hard to Count populations.

Primary Focus: Hard to Locate, Hard to Contact, Hard to Persuade, Hard to Interview



2020 Census: Counting Everyone Once, Only Once, and in the Right Place

Integrated Design for Hard to Count Populations: Integrated Partnership and Communications

Objectives: To reach every household in the nation, delivering the right messages to the right audiences at the right time. To increase awareness of the decennial census. To promote self-response. To reduce the cost of nonresponse followup operations. And, to improve response rates for hard to count populations.

Primary Focus: Hard to Contact, Hard to Persuade, Hard to Interview



2020 Census: Counting Everyone Once, Only Once, and in the Right Place

Integrated Design for Hard to Count Populations: Content and Forms Design

Objectives: To develop content and questions to encourage high response rates across all response modes and all population groups.

Primary Focus: Hard to Persuade, Hard to Interview



2020 Census: Counting Everyone Once, Only Once, and in the Right Place

Integrated Design for Hard to Count Populations: Language Services

Objectives: To identify ways to reduce language barriers to enumeration for non-English-speaking populations and to ensure cultural relevancy and meaningful translation of 2020 Census questionnaires and associated materials.

Primary Focus: Hard to Interview

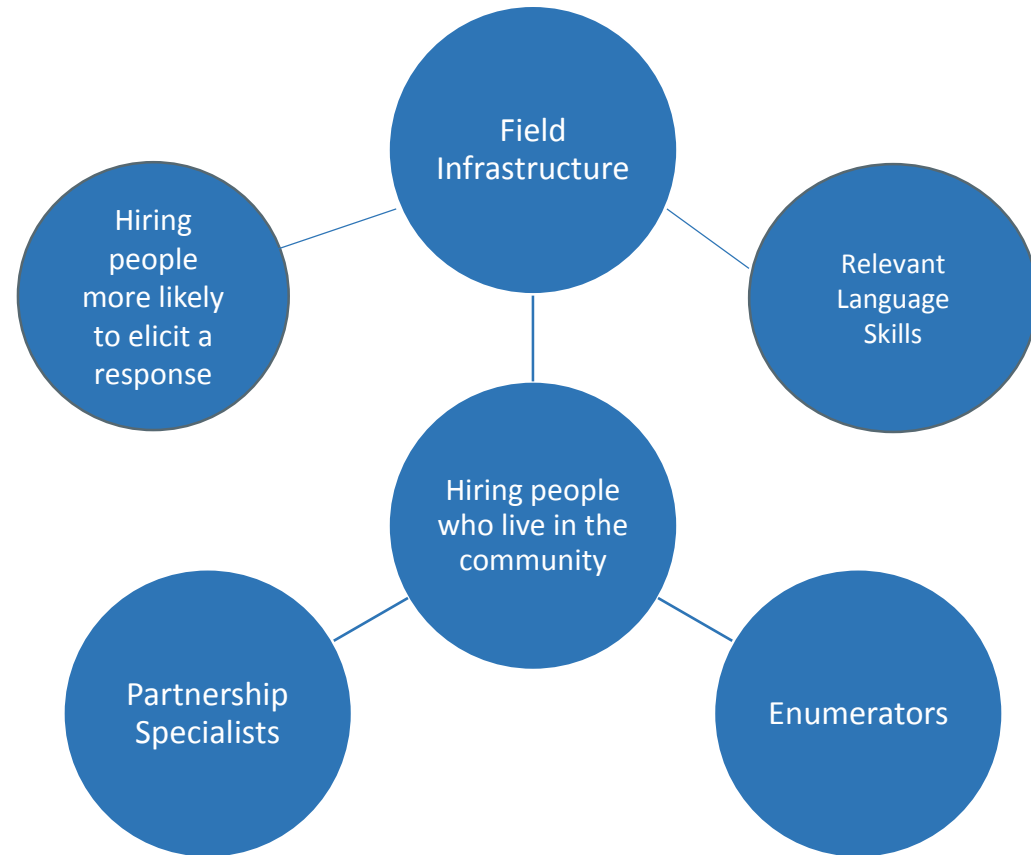


2020 Census: Counting Everyone Once, Only Once, and in the Right Place

Integrated Design for Hard to Count Populations: Field Infrastructure

Objectives: To provide human resources and personnel management support functions, including recruiting, hiring, and onboarding that reflect the diversity of the nation to support, facilitate, and encourage response.

Primary Focus: Hard to Persuade, Hard to Interview

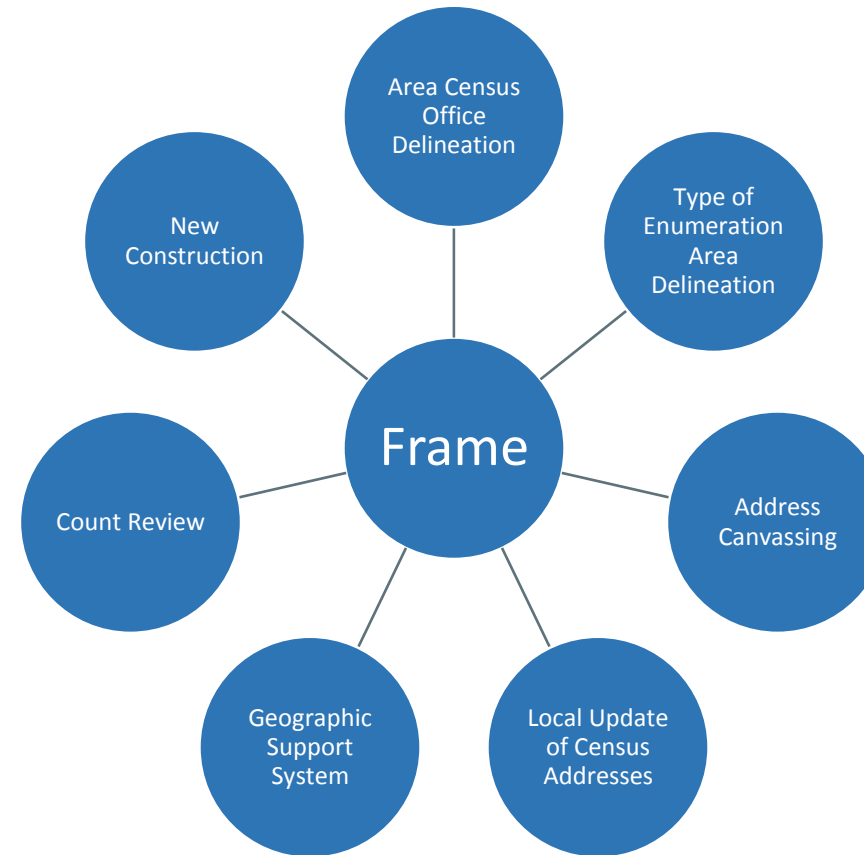


2020 Census: Counting Everyone Once, Only Once, and in the Right Place

Integrated Design for Hard to Count Populations: Frame

Objectives: To develop a high-quality geospatial frame that serves as the universe for enumeration activities representing all places where people live or could live.

Primary Focus: Hard to Locate



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Integrated Design for Hard to Count Populations: Self-Response

Objectives: To maximize self-response through a robust contact strategy and multiple response options.

Primary Focus: Hard to Interview

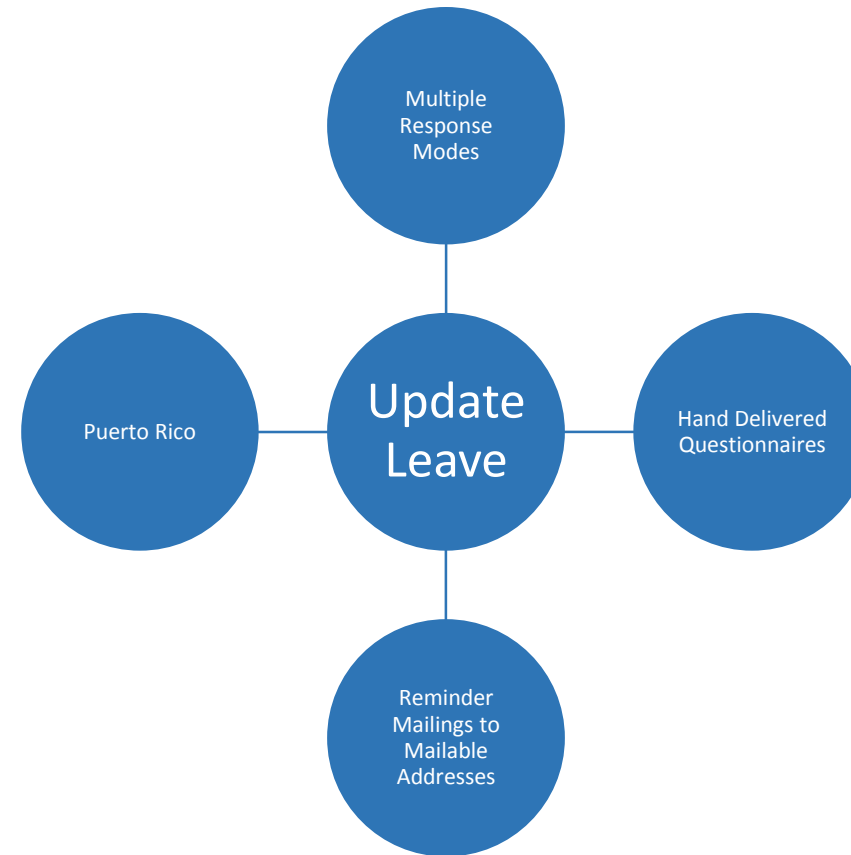


2020 Census: Counting Everyone Once, Only Once, and in the Right Place

Integrated Design for Hard to Count Populations: Update Leave

Objectives: To update the address frame and hand deliver questionnaires in geographic areas where the majority of housing units do not have mail delivered to the physical location of the address or areas that have experienced recent changes to the housing stock, e.g., natural disasters

Primary Focus: Hard to Locate, Hard to Contact

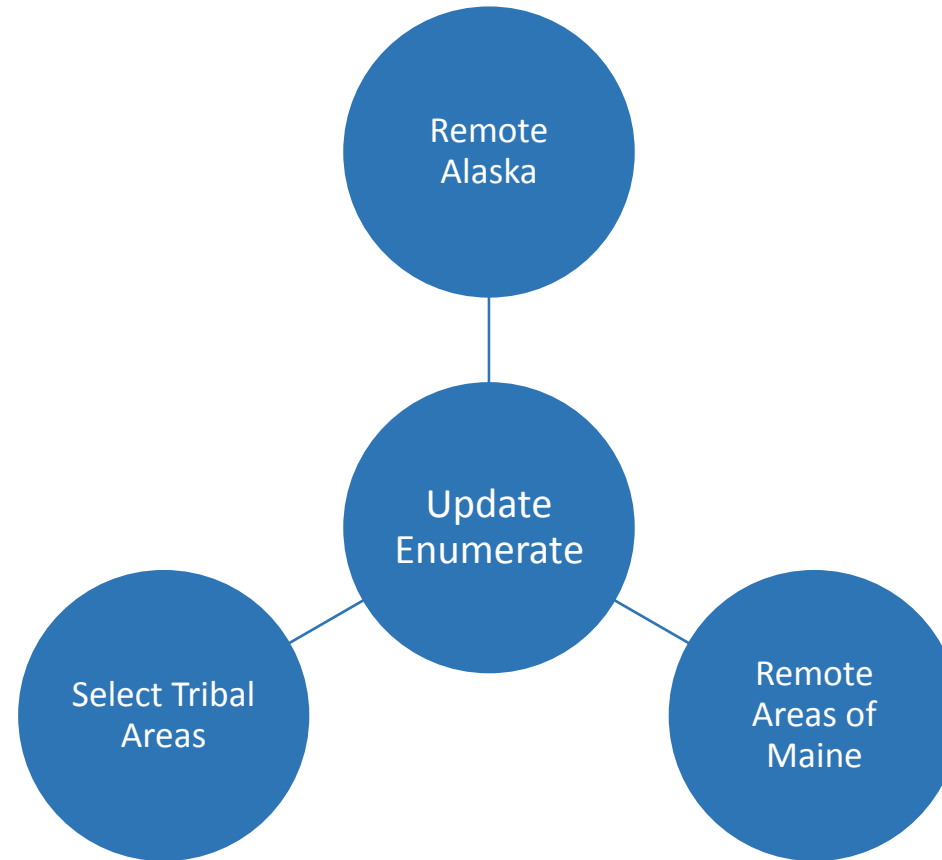


2020 Census: Counting Everyone Once, Only Once, and in the Right Place

Integrated Design for Hard to Count Populations: Update Enumerate

Objectives: To update the address frame and enumerate respondents in geographically remote areas with low housing unit density that are sparsely populated or have challenges with accessibility.

Primary Focus: Hard to Locate, Hard to Contact, Hard to Interview

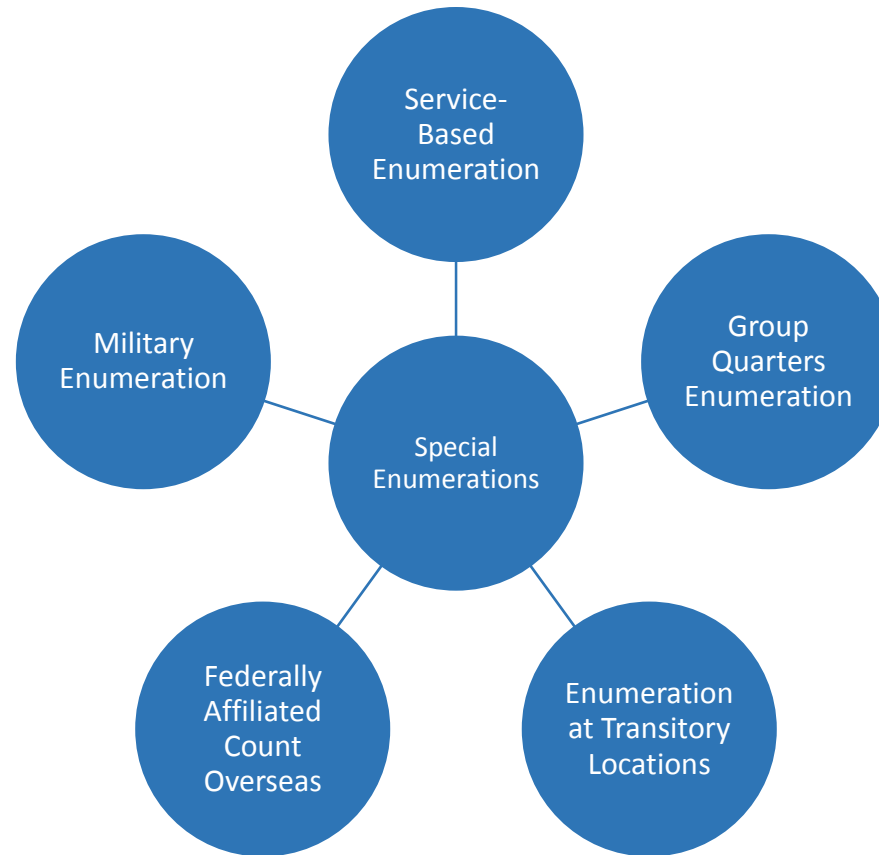


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Integrated Design for Hard to Count Populations: Special Enumerations

Objectives: To enumerate persons in special living arrangements, including those living in group quarters, transitory locations, persons experiencing homelessness, the military, and Federally affiliated persons overseas.

Primary Focus: Hard to Interview, Hard to Contact

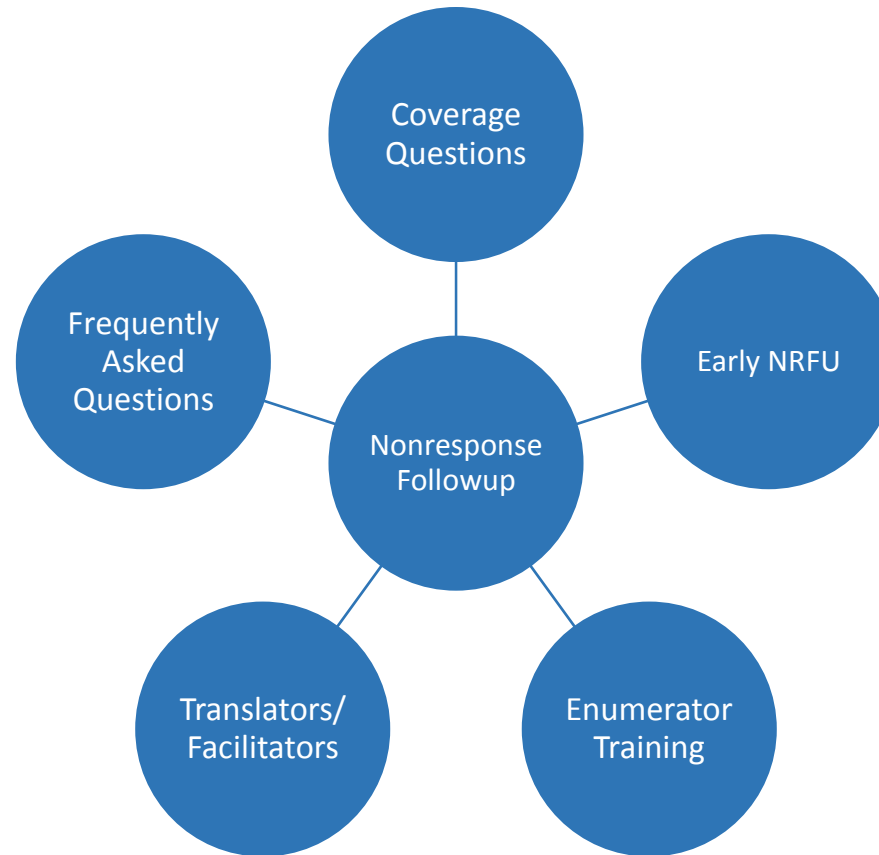


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Integrated Design for Hard to Count Populations: Nonresponse Followup

Objectives: To determine or resolve the housing unit status (occupied, vacant, non-existent) for nonresponding housing units for which a self-response has not been received and to collect census response data for housing units determined to be occupied.

Primary Focus: Hard to Persuade



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Integrated Design for Hard to Count Populations: Coverage Improvement

Objectives: To re-contact housing units in an effort to determine if people were missed, counted in the wrong place, or counted more than once during the census.

Primary Focus: Hard to Locate



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Integrated Design for Hard to Count Populations: Unexpected Events/Natural Disasters

- Rapid Response
- Factors:
 - Timing
 - Severity
 - Impacted geographic area
 - Access
 - Environmental
- Past Experiences:
 - Hurricanes: Katrina, Rita, Maria
 - Flooding: Red River
 - Earthquakes: San Francisco
 - H1N1 (Swine Flu) Virus

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Integrated Design for Hard to Count Populations: Tools*

- Planning Database
- Response Outreach Area Mapper (ROAM)
- Residence Criteria/Instructions
- Coverage Questions
- Language Materials
- Mailing Strategy
- Non-ID Response
- Administrative Records
- Field workforce
- Blitz Enumeration

2020 Census: Counting Everyone Once, Only Once, and in the Right Place

Integrated Design for Hard to Count Populations

Summary:

- Considerations of the 2020 Census environment
- Understanding Hard to Count Populations
- Integrated 2020 Census operational design
- Counting everyone once, only once, and in the right place

QUESTIONS?

2020 Disclosure Avoidance System (DAS)

Simson L. Garfinkel

Senior Computer Scientist for Confidentiality and Data Access

John M. Abowd

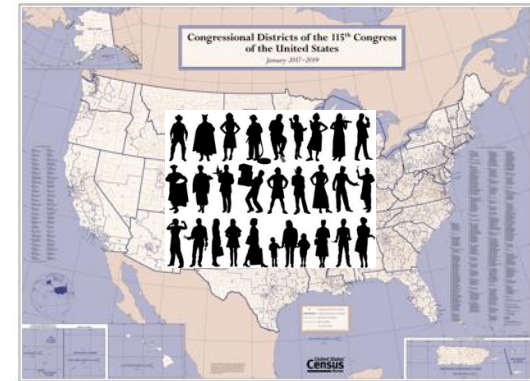
Chief Scientist

Associate Director for Research and Methodology (ADRM)

Disclosure Avoidance System

Purpose

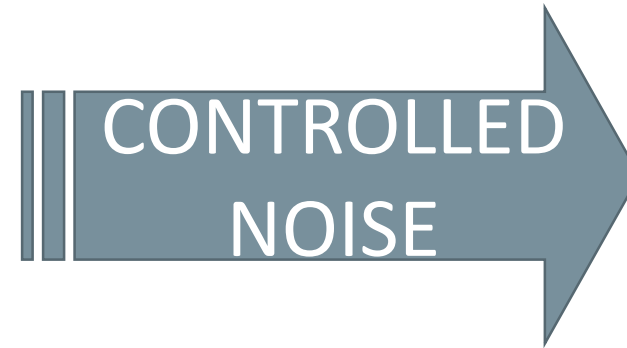
- The Disclosure Avoidance System (DAS) assures that the 2020 Census data products meet the legal requirements of Title 13, Section 9 of the U.S. Code.
- The DAS is designed to prevent **improper disclosures of data about individuals and establishments** in the 2020 census data products.
- Stakeholders: All users of data from the 2020 Census.



Disclosure Avoidance System

Agenda

- Project purpose — Why do we need a new DAS?
- Noise injection and differential privacy — A brief tutorial
- State of the project
- Looking forward and conclusion



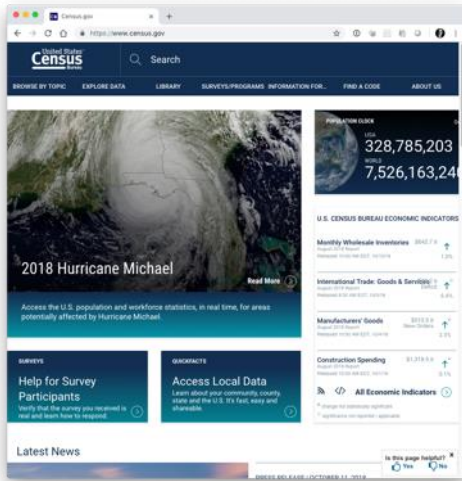
United States
Census
2020

Project purpose:

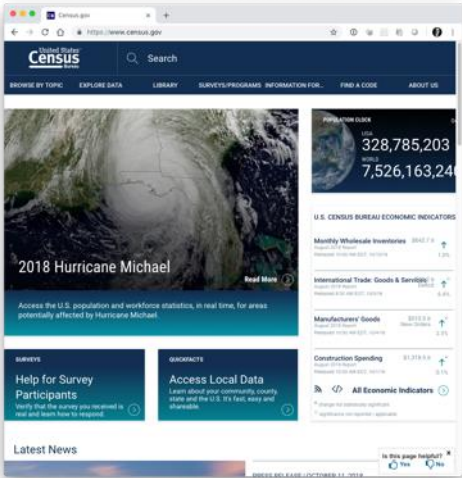
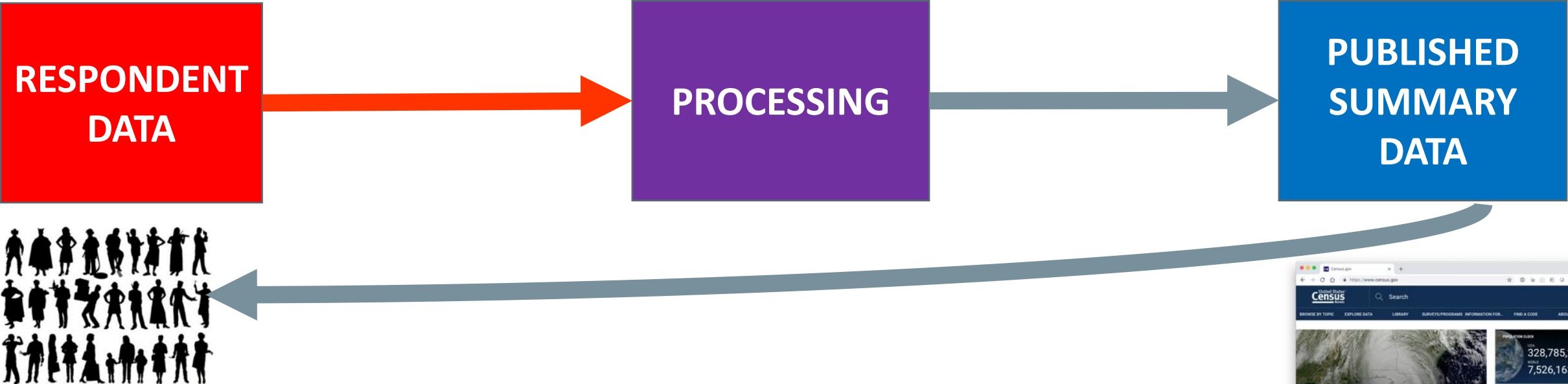
Why we need a new disclosure avoidance system



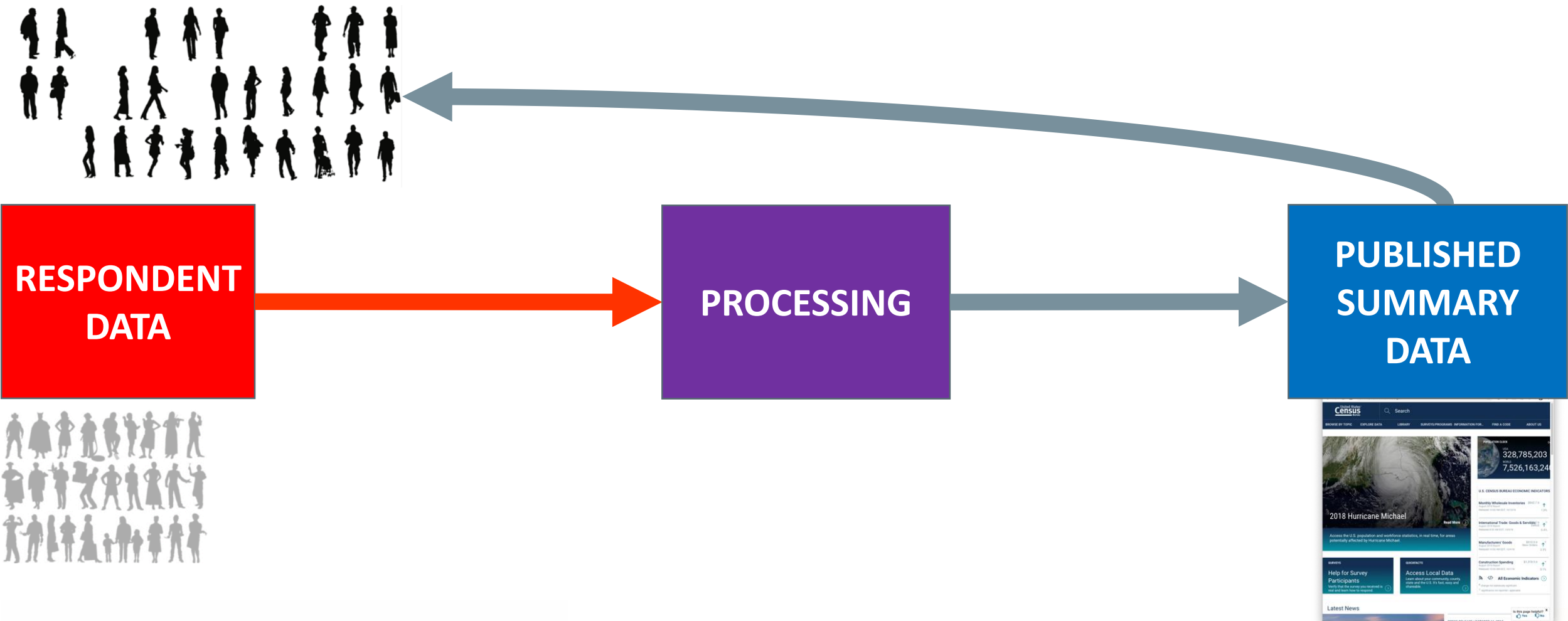
We create statistics by collecting data, processing and publishing



Database reconstruction is a mathematical process that reverses this process.



Database reconstruction is a mathematical process that reverses this process.



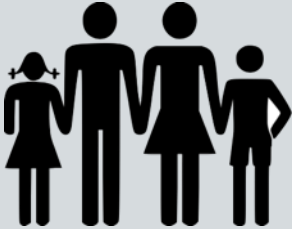
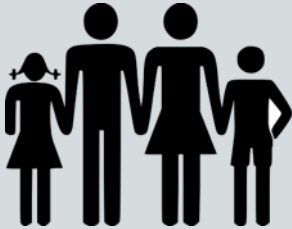
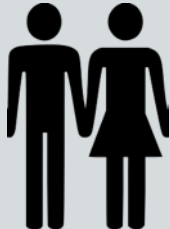
Consider a census block:



PUBLISHED DATA

	Counts
Age < 18	4
Age >= 18	6
Race 1	4
Race 2	4
Race 3	2

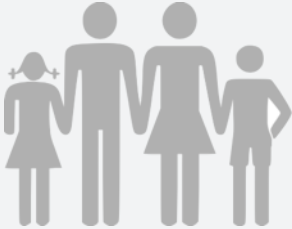
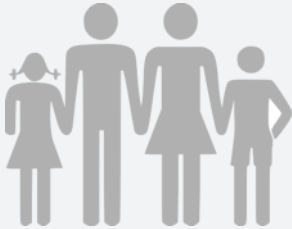


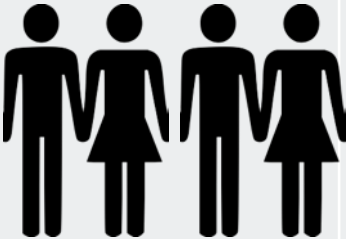

RECONSTRUCTED DATA

	Race 1	Race 2	Race 3
R1			

PUBLISHED DATA

	Counts
Age < 18	4
Age >= 18	6
Race 1	4
Race 2	4
Race 3	2

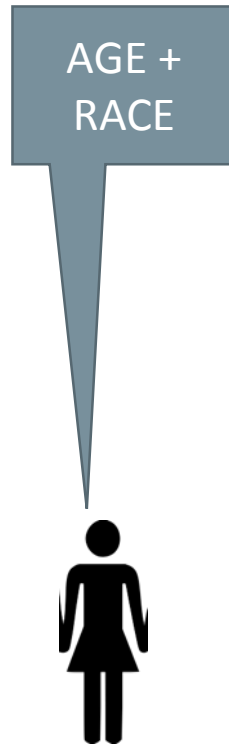
RECONSTRUCTED DATA

	Race 1	Race 2	Race 3
R1			
R2			

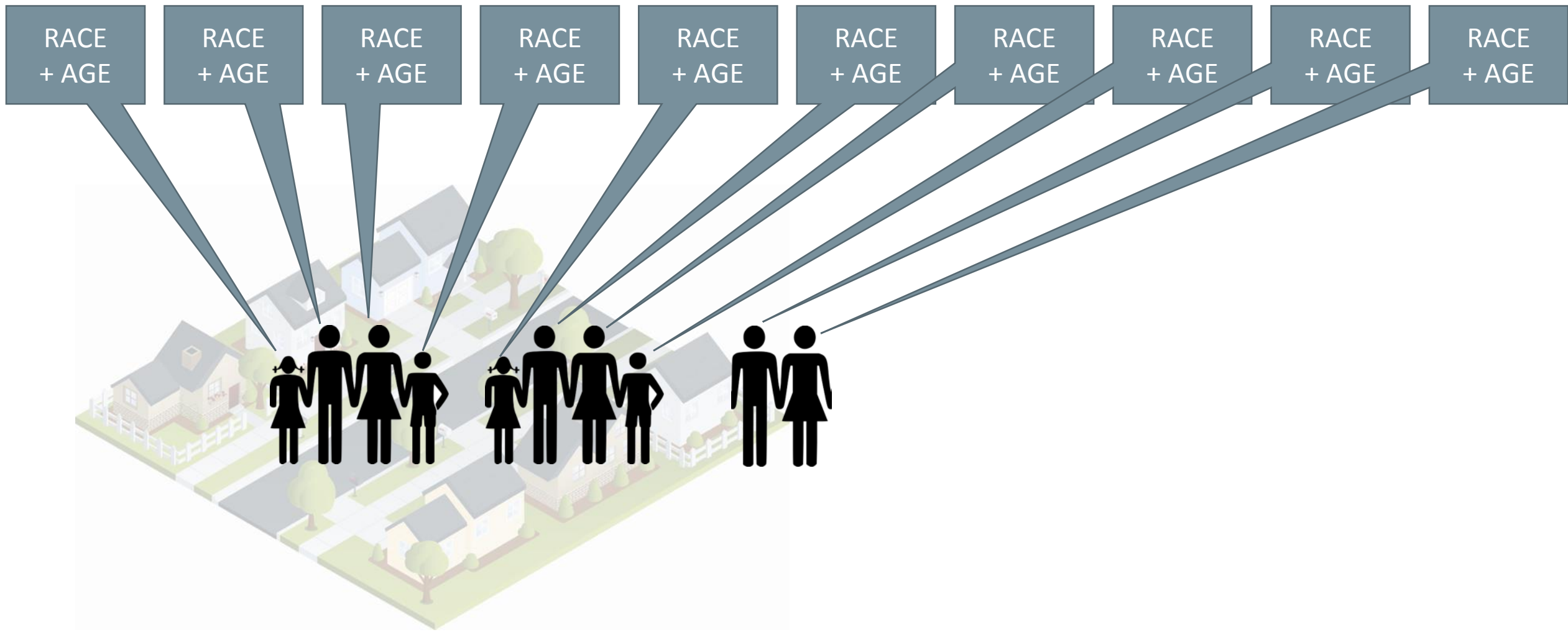
PUBLISHED DATA

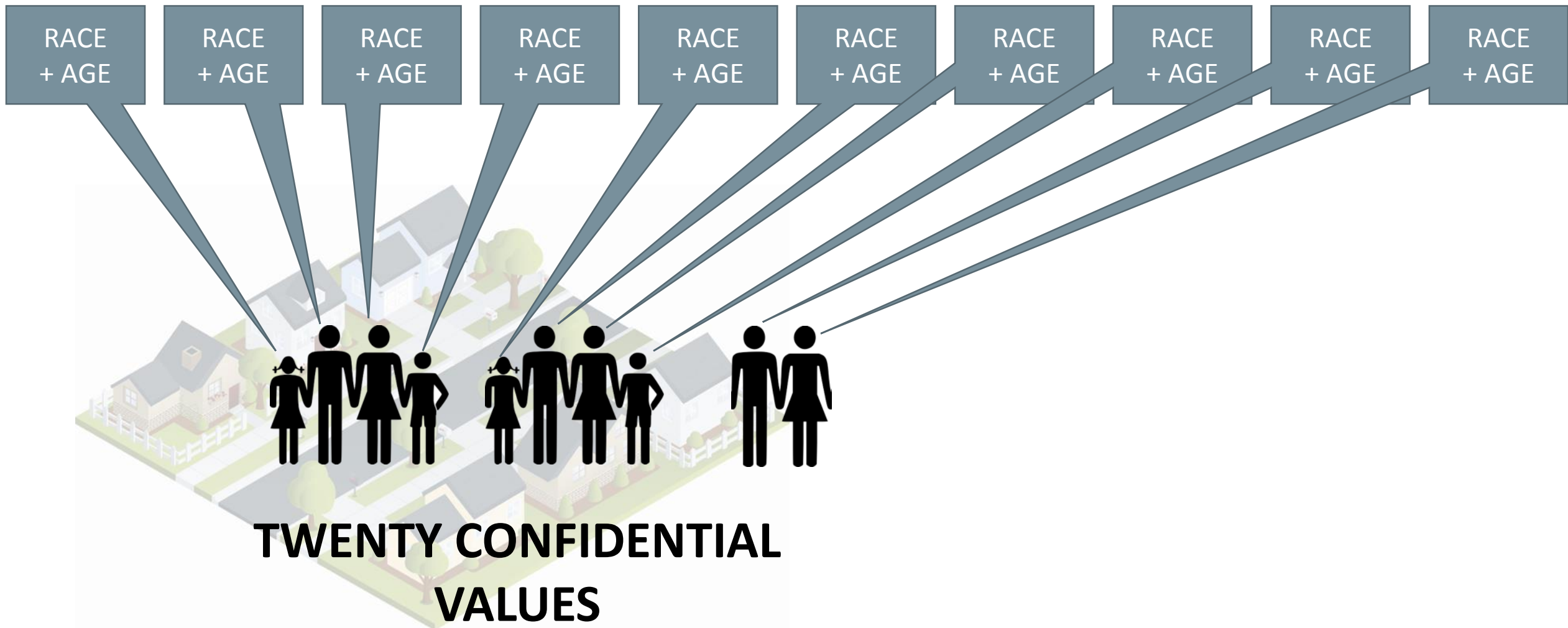
	Counts
Age < 18	4
Age >= 18	6
Race 1	4
Race 2	4
Race 3	2

	Race 1	Race 2	Race 3
			



AGE \geq 18







PUBLISHED DATA

	Counts
Age < 18	4
Age >= 18	6
Race 1	4
Race 2	4
Race 3	2

FIVE PUBLISHED STATISTICS



IT'S IN OUR HANDS

United States[®]
Census
2010

“This is the official form for all the people at this address.”

United States
Census
2010

This is the official form for all the people at this address.
It is quick and easy, and your answers are protected by law.

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

Use a blue or black pen.
Start here

The Census must count every person living in the United States on April 1, 2010.

Before you answer Question 1, count the people living in this house, apartment, or mobile home using our guidelines.

- Count all people, including babies, who live and sleep here most of the time.

The Census Bureau also conducts counts in institutions and other places, so:

- Do not count anyone living away either at college or in the Armed Forces.
- Do not count anyone in a nursing home, jail, prison, detention facility, etc., on April 1, 2010.
- Leave these people off your form, even if they will return to live here after they leave college, the nursing home, the military, jail, etc. Otherwise, they may be counted twice.

The Census must also include people without a permanent place to stay, so:

- If someone who has no permanent place to stay is staying here on April 1, 2010, count that person. Otherwise, he or she may be missed in the census.

1. How many people were living or staying in this house, apartment, or mobile home on April 1, 2010?

Number of people =

2. Were there any additional people staying here April 1, 2010 that you did not include in Question 1? Mark ☒ all that apply.

☐ Children, such as newborn babies or foster children

☐ Relatives, such as adult children, cousins, or in-laws

☐ Nonrelatives, such as roommates or live-in baby sitters

☐ People staying here temporarily

☐ No additional people

3. Is this house, apartment, or mobile home — Mark ☒ ONE box.

☐ Owned by you or someone in this household with a mortgage or loan? Include home equity loans.

☐ Owned by you or someone in this household free and clear (without a mortgage or loan)?

☐ Rented?

☐ Occupied without payment of rent?

4. What is your telephone number? We may call if we don't understand an answer.

Area Code + Number

- -

OMB No. 0607-0919-C: Approval Expires 12/31/2011.

Form **D-61** (9-25-2008)

5. Please provide information for each person living here. Start with a person living here who owns or rents this house, apartment, or mobile home. If the owner or renter lives somewhere else, start with any adult living here. This will be Person 1.

What is Person 1's name? *Print name below.*

Last Name

First Name MI

6. What is Person 1's sex? Mark ☒ ONE box.

☐ Male ☐ Female

7. What is Person 1's age and what is Person 1's date of birth? Please report babies as age 0 when the child is less than 1 year old. *Print numbers in boxes.*

Age on April 1, 2010 Month Day Year of birth

→ NOTE: Please answer BOTH Question 8 about Hispanic origin and Question 9 about race. For this census, Hispanic origins are not races.

8. Is Person 1 of Hispanic, Latino, or Spanish origin?

☐ No, not of Hispanic, Latino, or Spanish origin

☐ Yes, Mexican, Mexican Am., Chicano

☐ Yes, Puerto Rican

☐ Yes, Cuban

☐ Yes, another Hispanic, Latino, or Spanish origin — *Print origin, for example, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.*

9. What is Person 1's race? Mark ☒ one or more boxes.

☐ White

☐ Black, African Am., or Negro

☐ American Indian or Alaska Native — *Print name of enrolled or principal tribe.*

☐ Asian Indian ☐ Japanese ☐ Native Hawaiian

☐ Chinese ☐ Korean ☐ Guamanian or Chamorro

☐ Filipino ☐ Vietnamese ☐ Samoan

☐ Other Asian — *Print race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.*

☐ Other Pacific Islander — *Print race, for example, Fijian, Tongan, and so on.*

☐ Some other race — *Print race.*

10. Does Person 1 sometimes live or stay somewhere else?

☐ No ☐ Yes — Mark ☒ all that apply.

☐ In college housing ☐ For child custody

☐ In the military ☐ In jail or prison

☐ At a seasonal or second residence ☐ In a nursing home

☐ For another reason

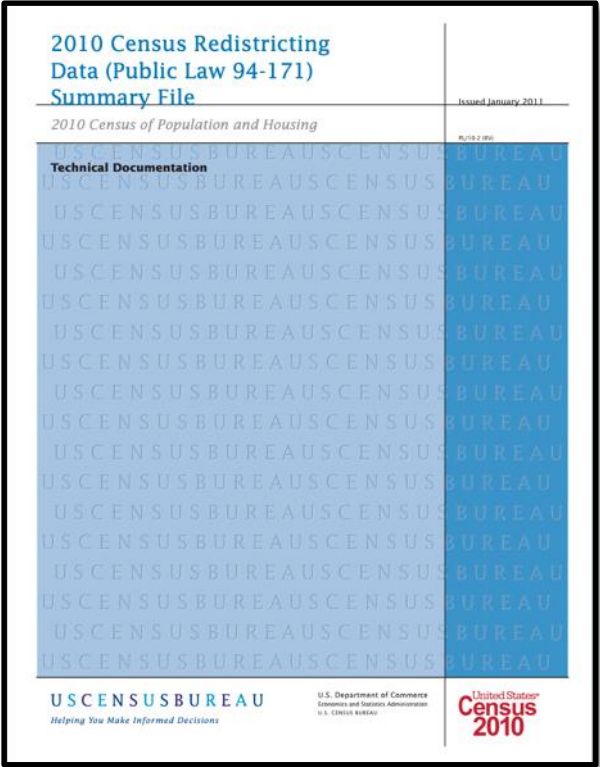
→ If more people were counted in Question 1, continue with Person 2.

“It is quick and easy, and your answers are protected by law.”

2010 Census of Population and Housing

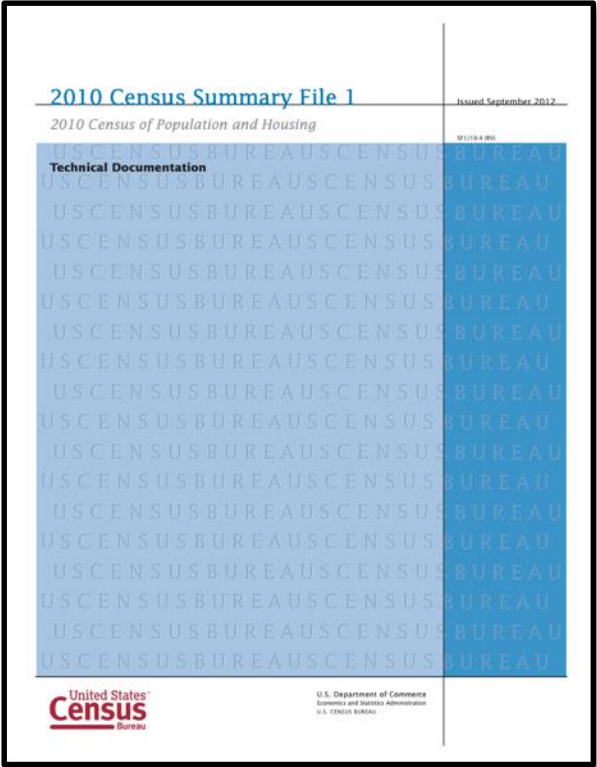
Total population	308,745,538
Pieces of information per person:	6
Total pieces of information:	1,852,473,228

2010 Census Publication Schedule



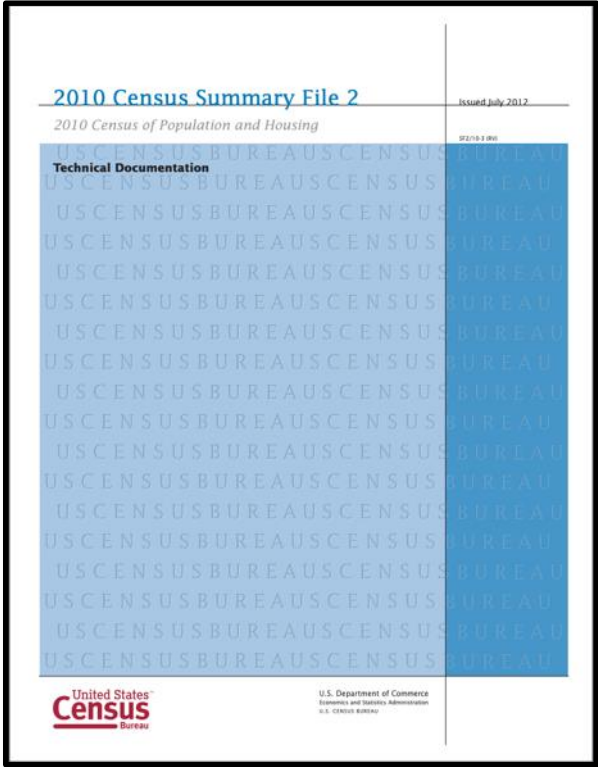
PL94-171 Redistricting

2,771,998,263



Balance of Summary File 1

2,806,899,669



Summary File 2

2,093,683,376

2010 Census: Summary of Publications (approximate counts)

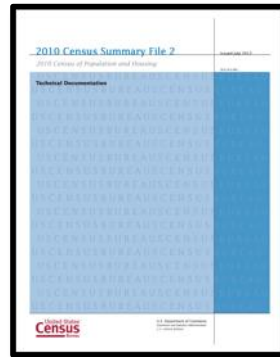
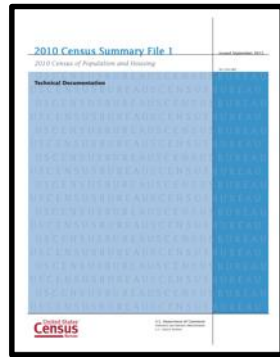
Publication	Released counts (including zeros)
PL94-171 Redistricting	2,771,998,263
Balance of Summary File 1	2,806,899,669
Summary File 2	2,093,683,376
Public-use micro data sample	30,874,554
Lower bound on published statistics	7,703,455,862
Statistics/person	25

The threat of database reconstruction

2010 Census Statistics/person collected:	6
2010 Census Statistics/person published:	25
Lower bound on collected statistics: (308,745,538 x 6)	1,852,473,228
Lower bound on published statistics (25 statistics per person)	7,703,455,862

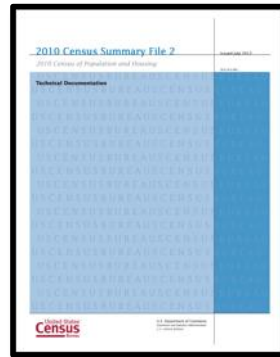
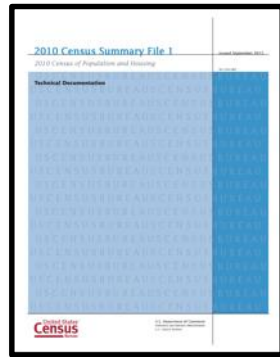
Two privacy mechanisms for the 2010 Census

Aggregation



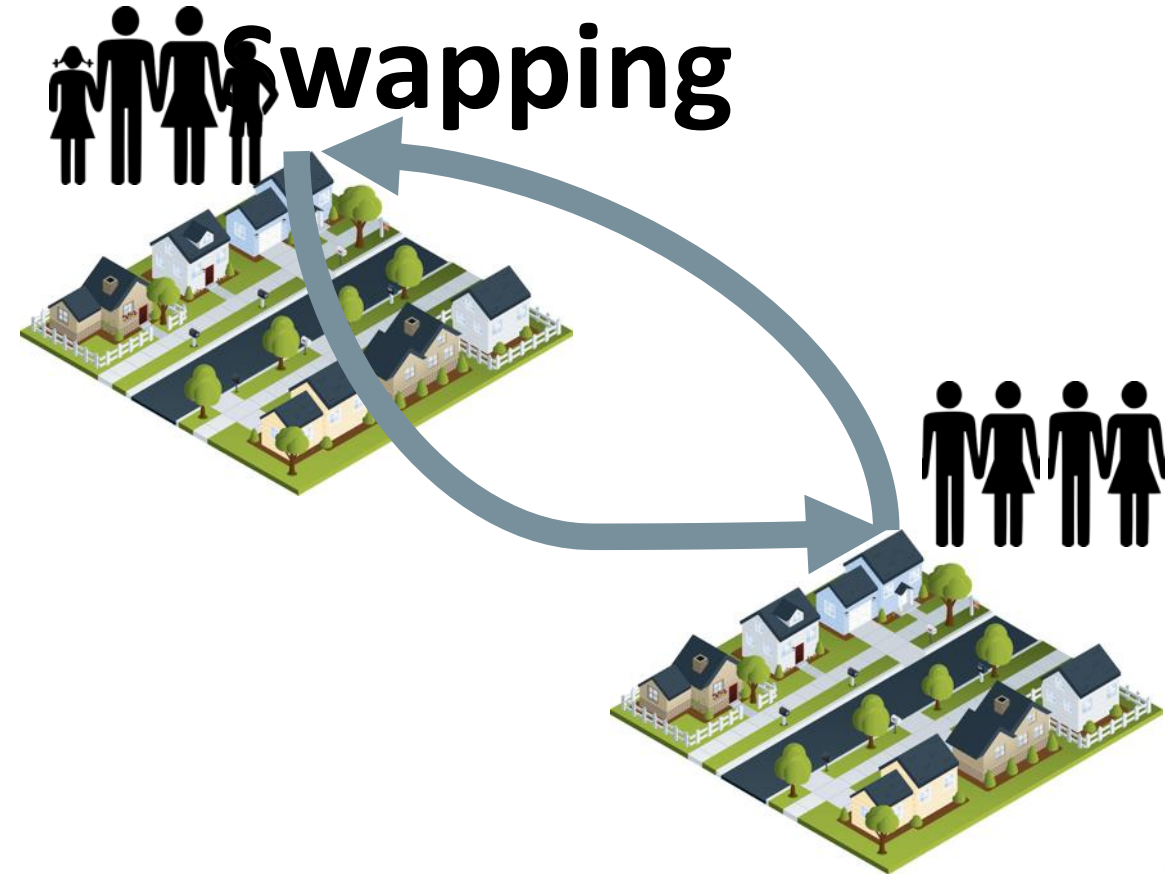
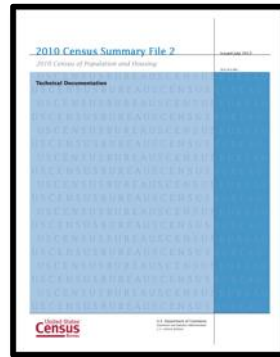
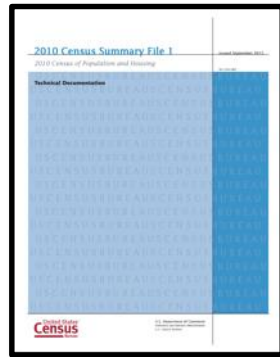
Two privacy mechanisms for the 2010 Census

Aggregation



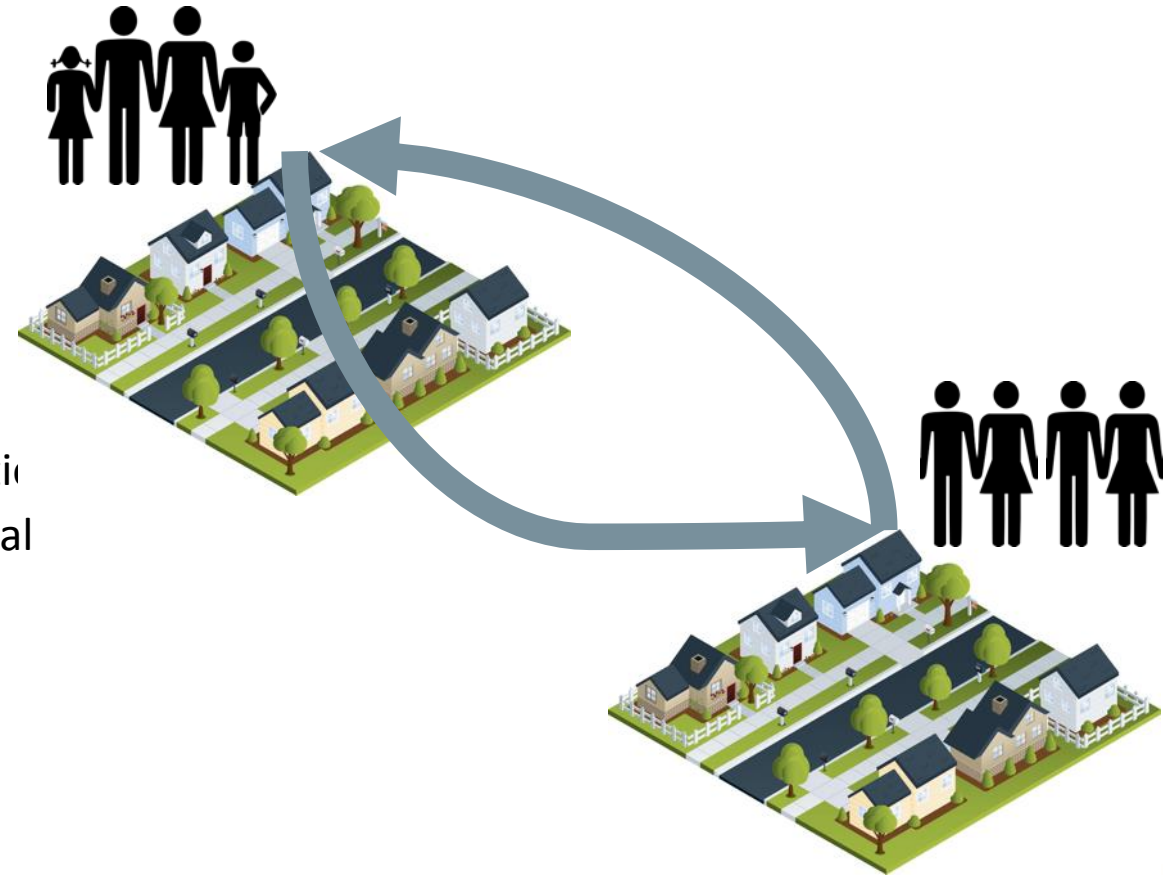
Two privacy mechanisms for the 2010 Census

Aggregation

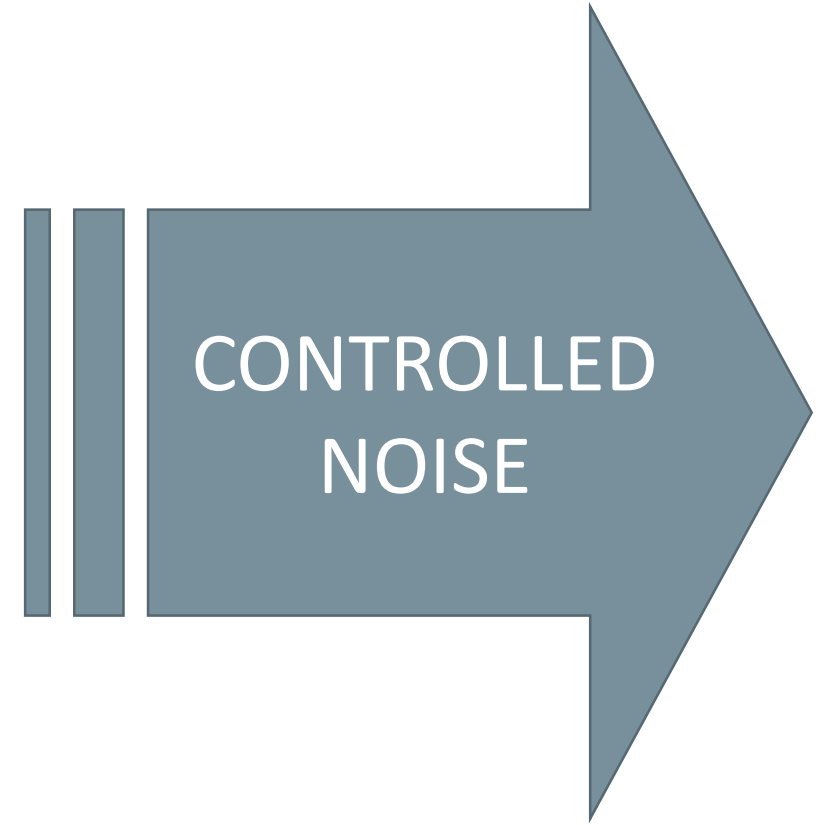


Household swapping was used in 2000 and 2010.

- Advantages of swapping:
 - Easy to understand
 - Does not affect state counts
 - Can be run state-by-state
 - Operation is “invisible” to the rest of census processing
- Disadvantages:
 - Does not consider or protect against database reconstruction
 - Swap rate and details of swapping must remain confidential
 - Privacy guarantee based on the lack of external data

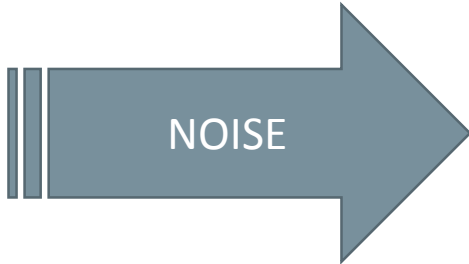


Noise injection and differential privacy



Database reconstruction and noise injection

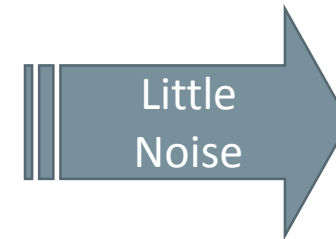
	Counts
Age < 18	4
Age >= 18	6
Race 1	4
Race 2	4
Race 3	2



Counts
5
5
3
5
2

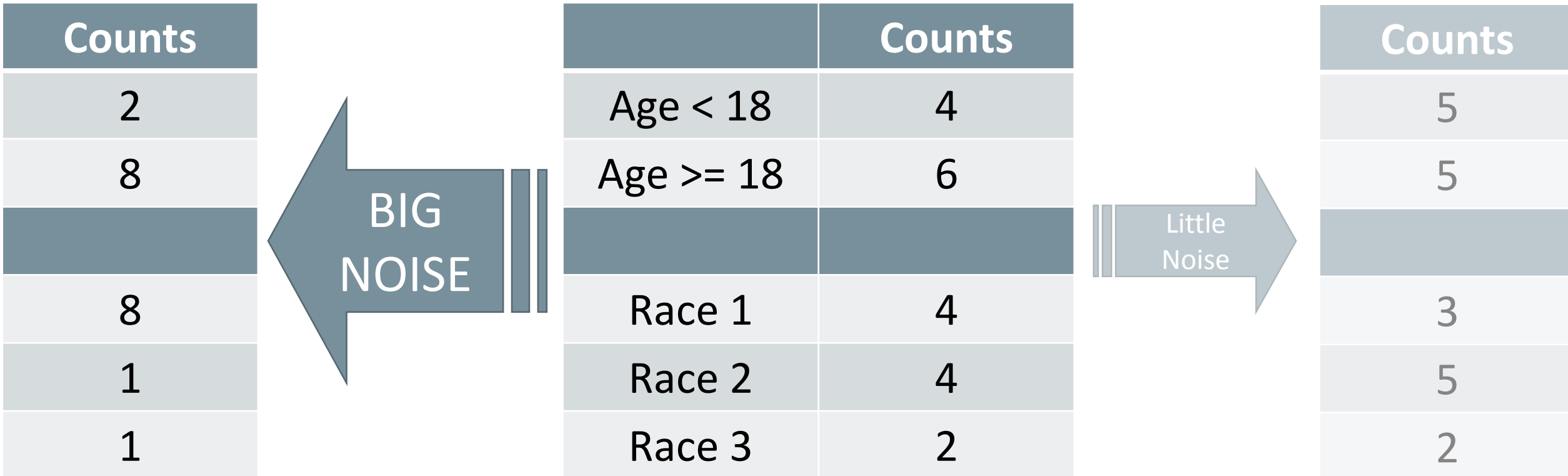
The more noise, the more privacy — and the less accuracy

	Counts
Age < 18	4
Age >= 18	6
Race 1	4
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Race 3	2



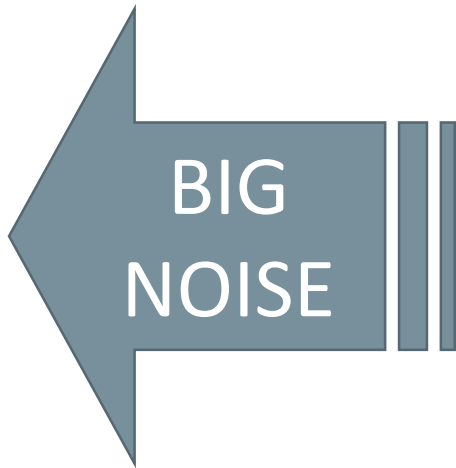
Counts
5
5
3
5
2

The more noise, the more privacy — and the less accuracy



The more noise, the more privacy — and the less accuracy

Counts
2
8
8
1
1



	Counts
Age < 18	4
Age >= 18	6
Race 1	4
Race 2	4
Race 3	2

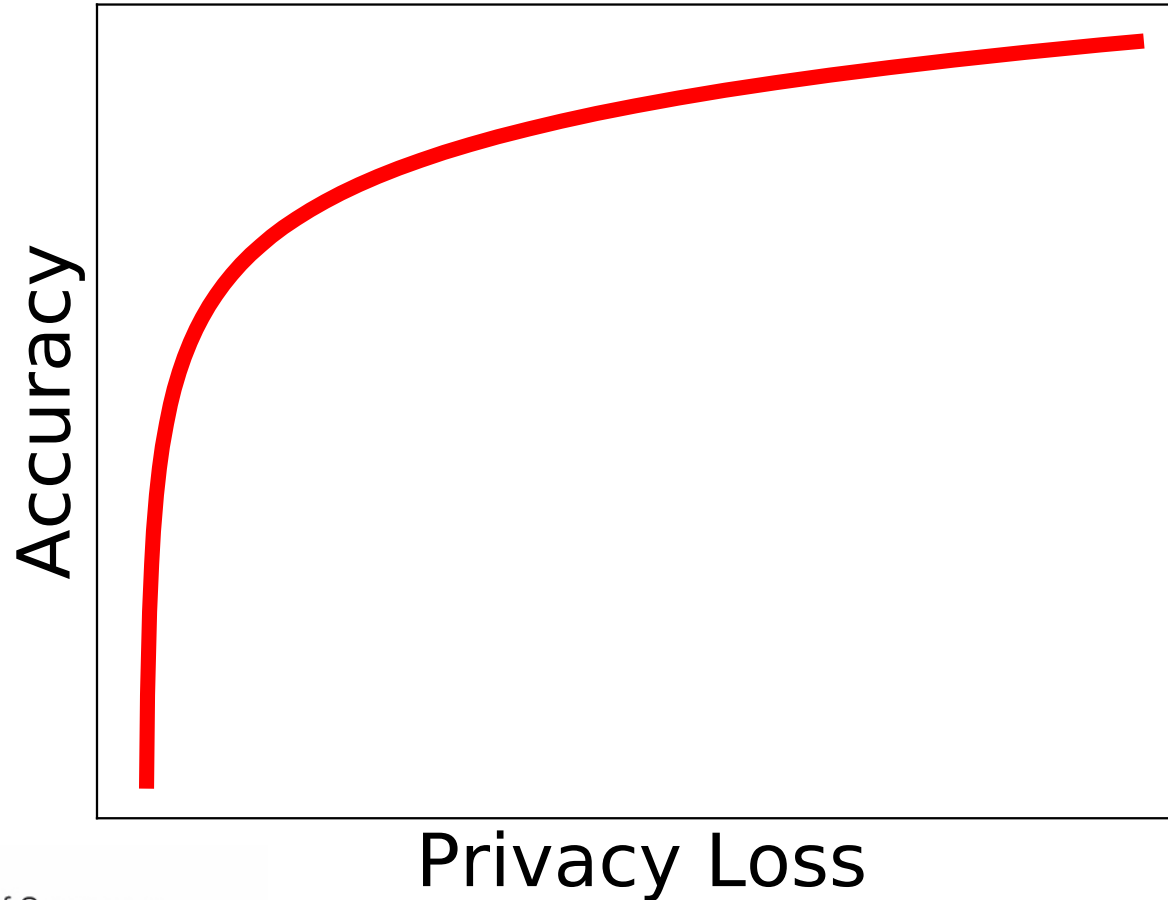
POSSIBILITY 1

POSSIBILITY 2	
	Counts
Age < 18	8
Age >= 18	2

	Counts	
		3
Age < 18	3	2
Age >= 18	7	5
Race 1	5	
Race 2	2	
Race 3	3	

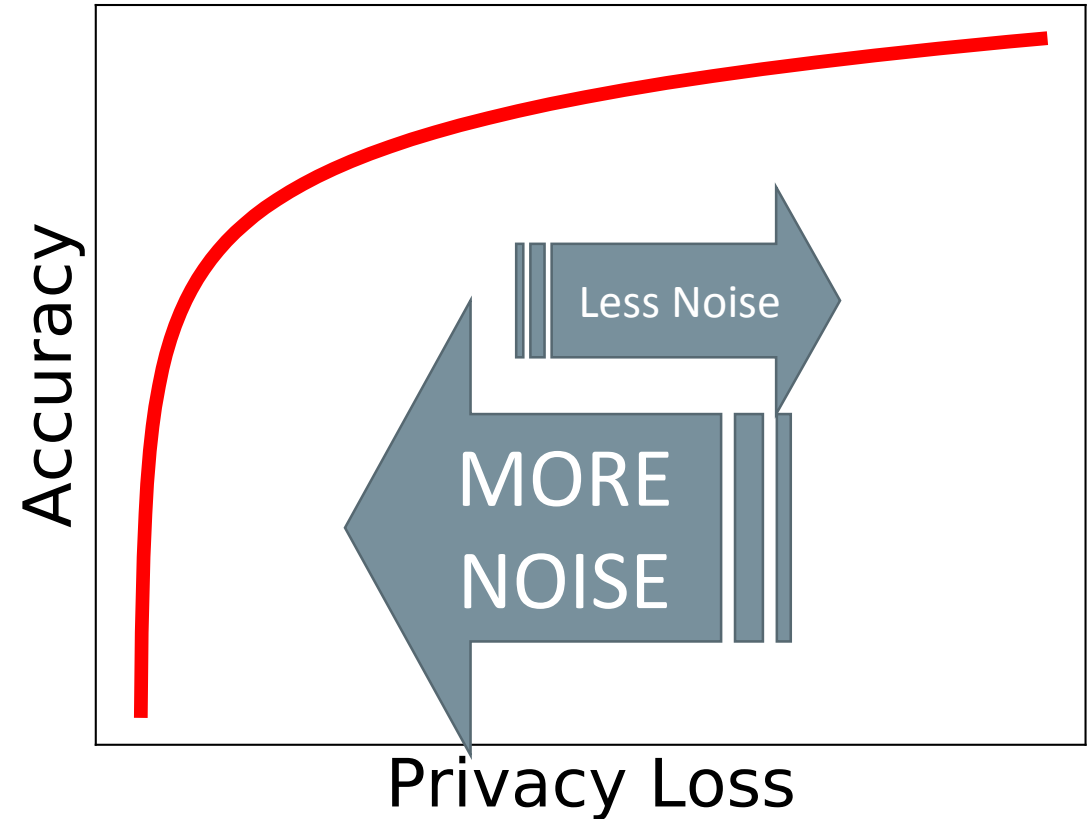
POSSIBILITY 3

Differential privacy is a tool for controlling the noise/accuracy trade-off



In 2017, the Census Bureau announced that it would use differential privacy for the 2020 Census.

- Differential privacy provides:
 - **Provable bounds** on the maximum privacy loss
 - **Algorithms** that allow policy makers to manage the trade-off between accuracy and privacy loss.

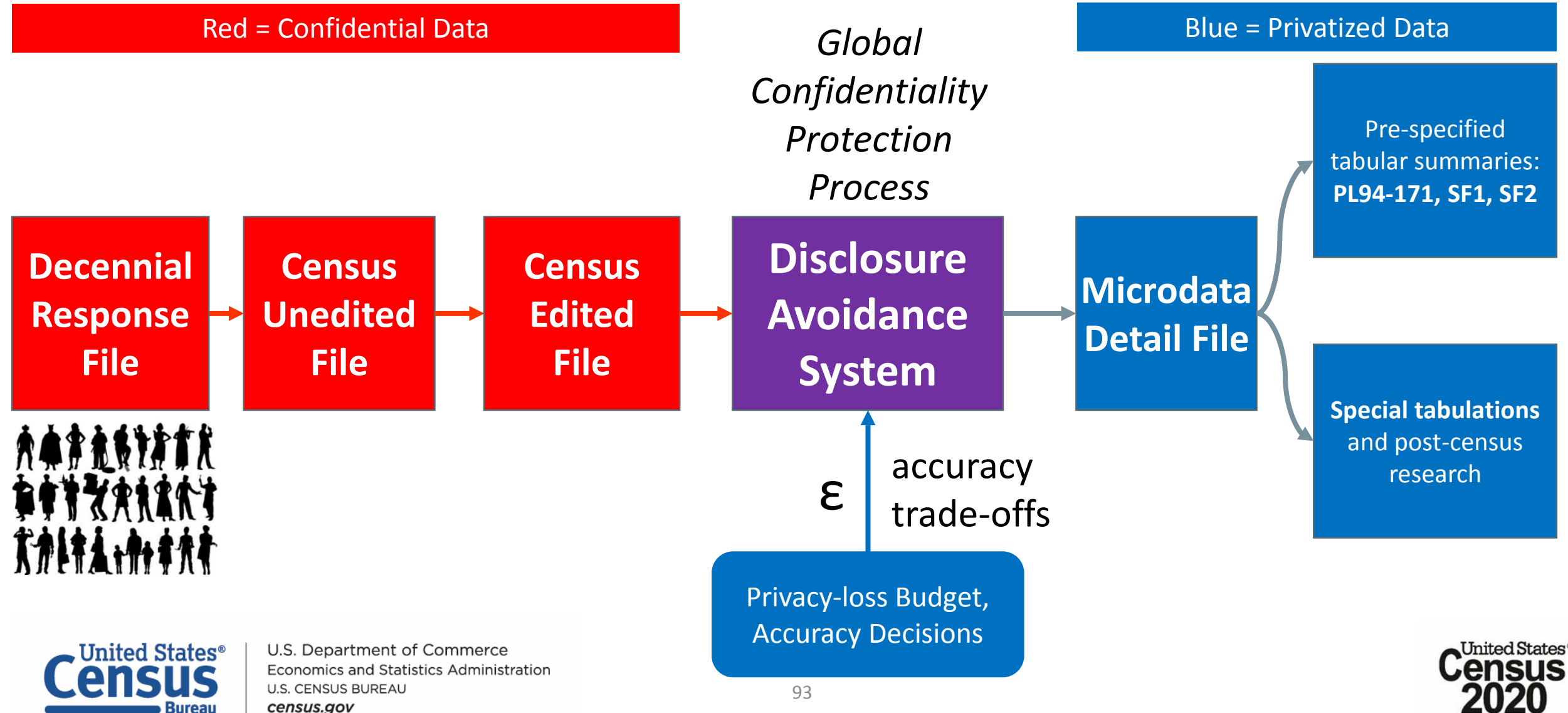


Final privacy-loss budget determined by the
Data Stewardship Executive Policy Committee (DSEP)
with recommendations from the Disclosure Review Board (DRB)

State of the project



The “Disclosure Avoidance System” is part of the Census data processing pipeline



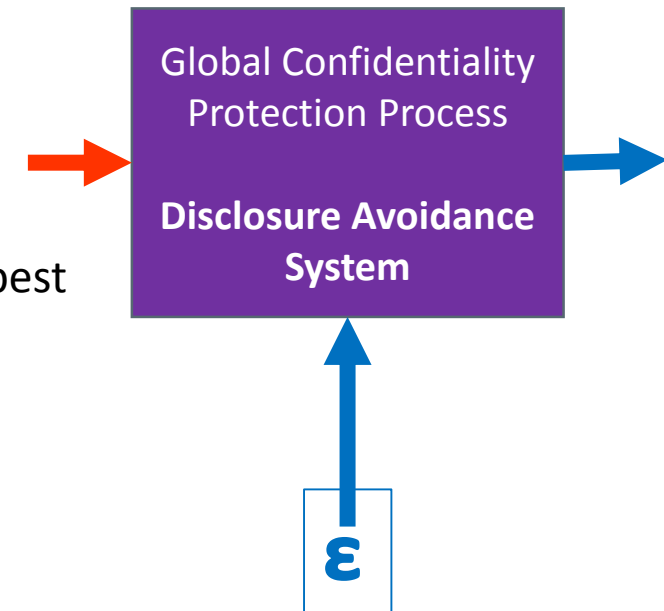
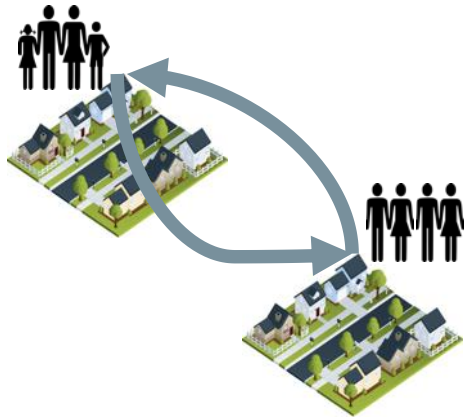
Differential privacy has many advantages to swapping

- **Advantages:**

- Privacy guarantees are *tunable and provable*
- Privacy guarantees are *future-proof*
- Privacy guarantees are *public and explainable*
- Protects against *database reconstruction*

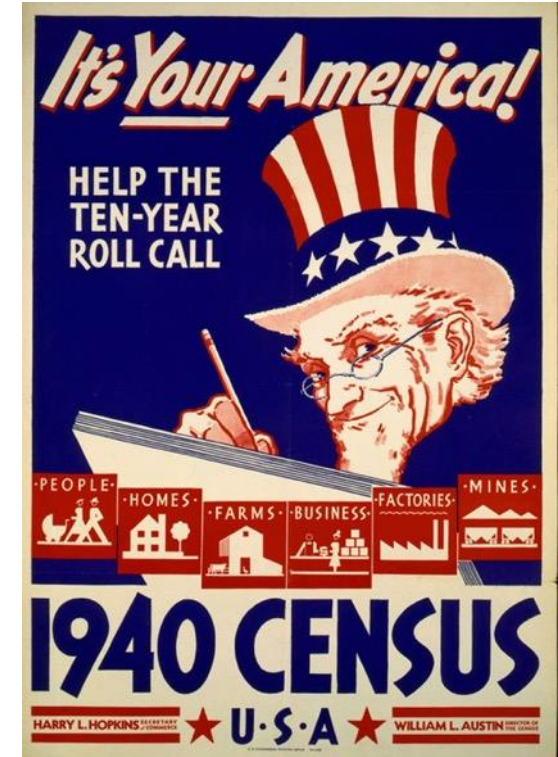
- **Disadvantages:**

- Entire country must be processed at once for best accuracy
- Every use of private data must be tallied in the *privacy-loss budget*

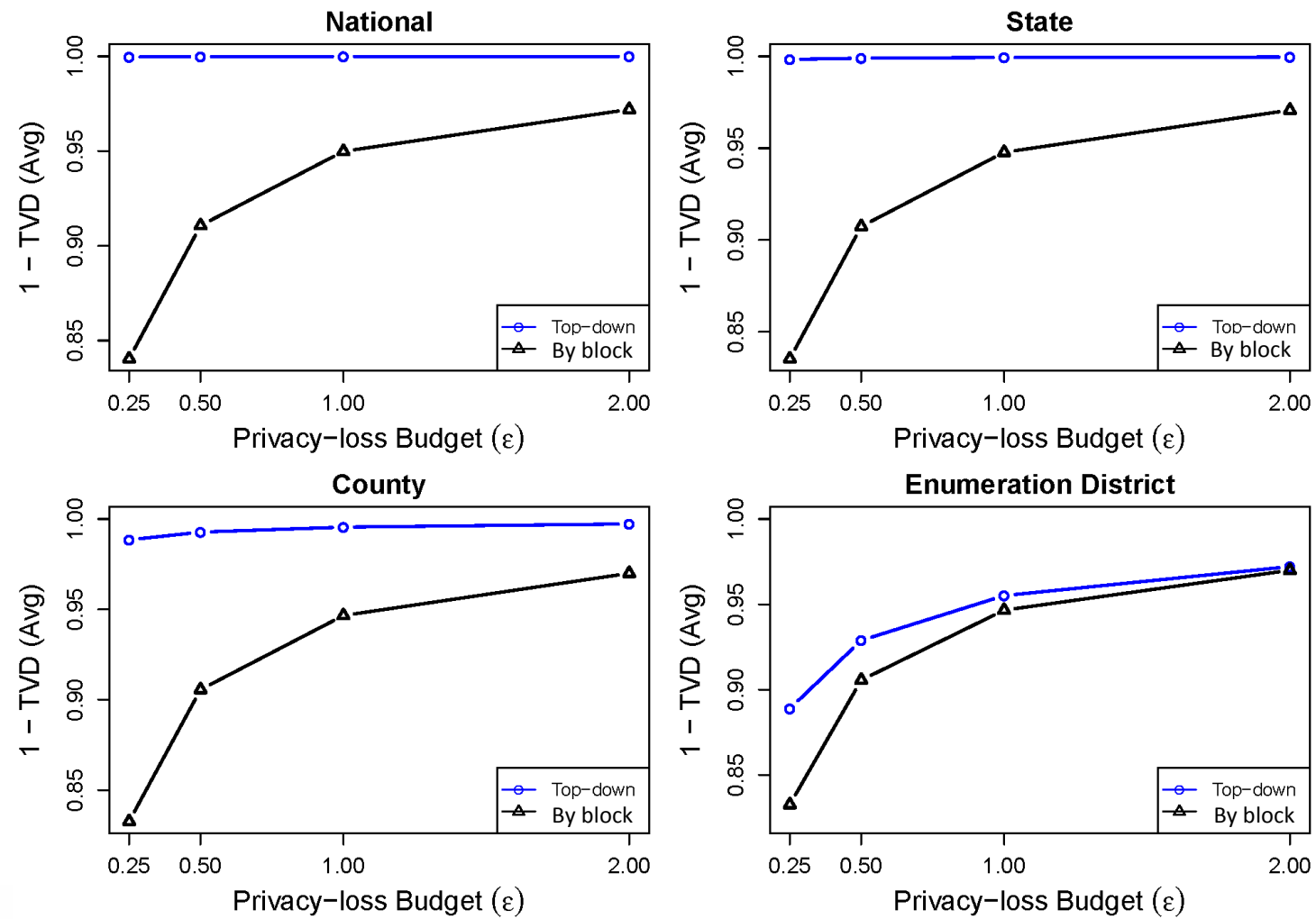


We will make the DAS public!

- Open source system
 - Source code published on the Internet
 - Testable with data from 1940 Census



Run of the 2020 DAS with 1940 Census data



Communications Strategy

- Differential privacy is not widely known or understood outside academia
- Most data users expect the same accuracy regardless of the level of detail
- In 2000 and 2010 we used swapping with an undisclosed swap rate
 - The Census Bureau did not quantify the error rate



State of the DAS Project(s): Engineering & Science

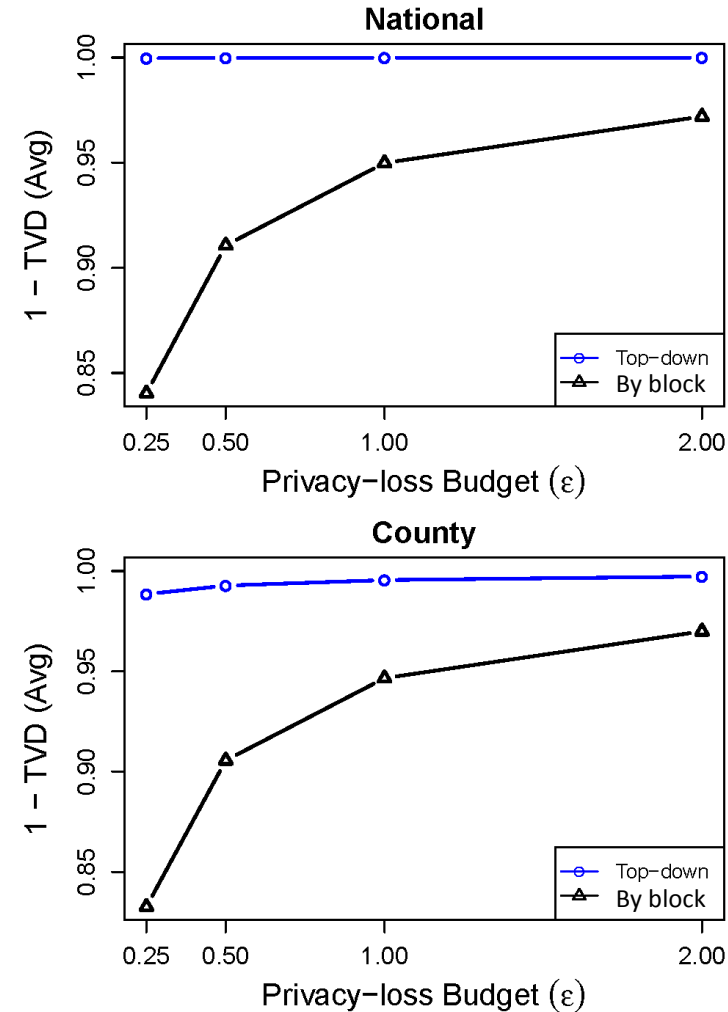
- **ENGINEERING PROJECT – Building a Turnkey Batch-Oriented System**
- Creating a production system that runs within the 2018 End-to-End Census Test and 2020 Census production environments
 - Resource intensive, but only when actively in use
 - Based on Amazon Elastic Map Reduce technology
 - Reads CEF from the Census Data Lake
 - Processes using DAS algorithms and a commercial optimizer
 - Creates the Microdata Detail File
 - Saves results in the Census Data Lake



Status: GREEN

State of the DAS Project(s): Engineering & Science

- **SCIENCE PROJECT — Improving the differential privacy algorithms**
- We are steadily improving the accuracy/privacy trade-off
- Progress requires interactive access to microdata from the 2010 Census, and continued access to high-performance computing on demand.



Looking forward

United States
Census
2020

DAS Highlights --- Good news!

- The current “top-down” algorithm handles the PL94-171 queries and generates micro-data that meet the requirements to publish test files.
- We’re sharing tables with **Subject Matter Experts (SMEs)** and discussing possible improvements
- We will soon integrate the **High-Dimensional Matrix Mechanism (HDMM)**, into our top-down algorithm, which will improve accuracy on requested tabulations
- The Census Bureau is collecting “use cases” from our data users

FRN Notice

We want users of 2020 Census Data Products to tell us how they use our data!

First FRN:


83 FR 84111


7/19/2018 -> 9/17/2018

Second FRN:

[83 FR 50636](#)

[10/09/2018 -> 11/08/2018](#)

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N Notice

Soliciting Feedback From Users on 2020 Census Data Products; Reopening of Comment Period

A Notice by the [Census Bureau](#) on 10/09/2018 

This document has a comment period that ends in 33 days. (11/08/2018) [SUBMIT A FORMAL COMMENT](#)

PUBLISHED DOCUMENT



Start Printed Page 50636

AGENCY:
Bureau of the Census, Department of Commerce.

ACTION:
Notice and request for comment; reopening of comment period.

SUMMARY:
The Bureau of the Census (Census Bureau) is reopening the comment period provided in the notice entitled "Soliciting Feedback from Users on 2020 Census Data Products," which was published in the **Federal Register** on July 19, 2018, in order to allow interested parties additional time to submit comments. The public comment period on that notice closed on September 17, 2018.

DOCUMENT DETAILS

Printed version:
[PDF](#)

Publication Date:
10/09/2018

Agencies:
[Bureau of the Census](#)

Dates:
The Census Bureau is reopening the comment period for the notice entitled "Soliciting Feedback from Users on 2020 Census Data Products," which was published in the **Federal Register** on July 19, 2018 ([83 FR 34111](#)). The Census Bureau will accept comments received on this notice by November 8, 2018.

DAS Science Highlights --- Challenges!

- We have not yet addressed **household queries** or **person-household joins**, although we have in-progress research for both
 - Householder queries, e.g. “how many households are headed by someone aged 20-30?”
 - Person-household join, e.g. “how many children are in households headed by someone aged 20-30?”
- Lack of scientists and engineers trained in differential privacy

2020 Disclosure Avoidance System: Conclusions

- We are using **differential privacy** to assure that published statistics do not violate the Census Bureau's Title 13 obligations
- This is a huge step forward for the Census Bureau
- We have a working system and will use it for the 2018 End-to-End Census Test
 - For 2018 we are only producing the PL94-171 redistricting tabulations
- There is a lot of scientific work that remains to be done
- Contact: Simson.L.Garfinkel@census.gov John.M.Abowd@census.gov

QUESTIONS?

2020 Post-Enumeration Survey Program Overview

Timothy Kennel

Decennial Statistical Studies Division

Post-Enumeration Survey (PES)

What is the PES?

- Goal
 - Measure coverage of people and housing units in the decennial census
 - Measure net coverage error and components of coverage
- How are the data used?
 - To assess the success of the census
 - To provide information to improve the coverage of future censuses
- How is coverage estimated?
 - Conduct a survey in sample blocks
 - Match case-by-case matching of people in an independent survey with enumerations in the census to determine who was missed or counted in error
- History
 - Conducted in the United States census for over 30 years

Post-Enumeration Survey (PES)

History of PES Estimates

Year	Census Count	Net Undercount	Percent Net Undercount
2010	300,703,000	-36,000	- 0.01%
2000	273,587,000	-1,332,000*	- 0.49%*
1990	248,710,000	3,994,000*	1.61%*
* Statistically different from zero			

How PES Estimates are Created

United States[®]
Census
Bureau

109

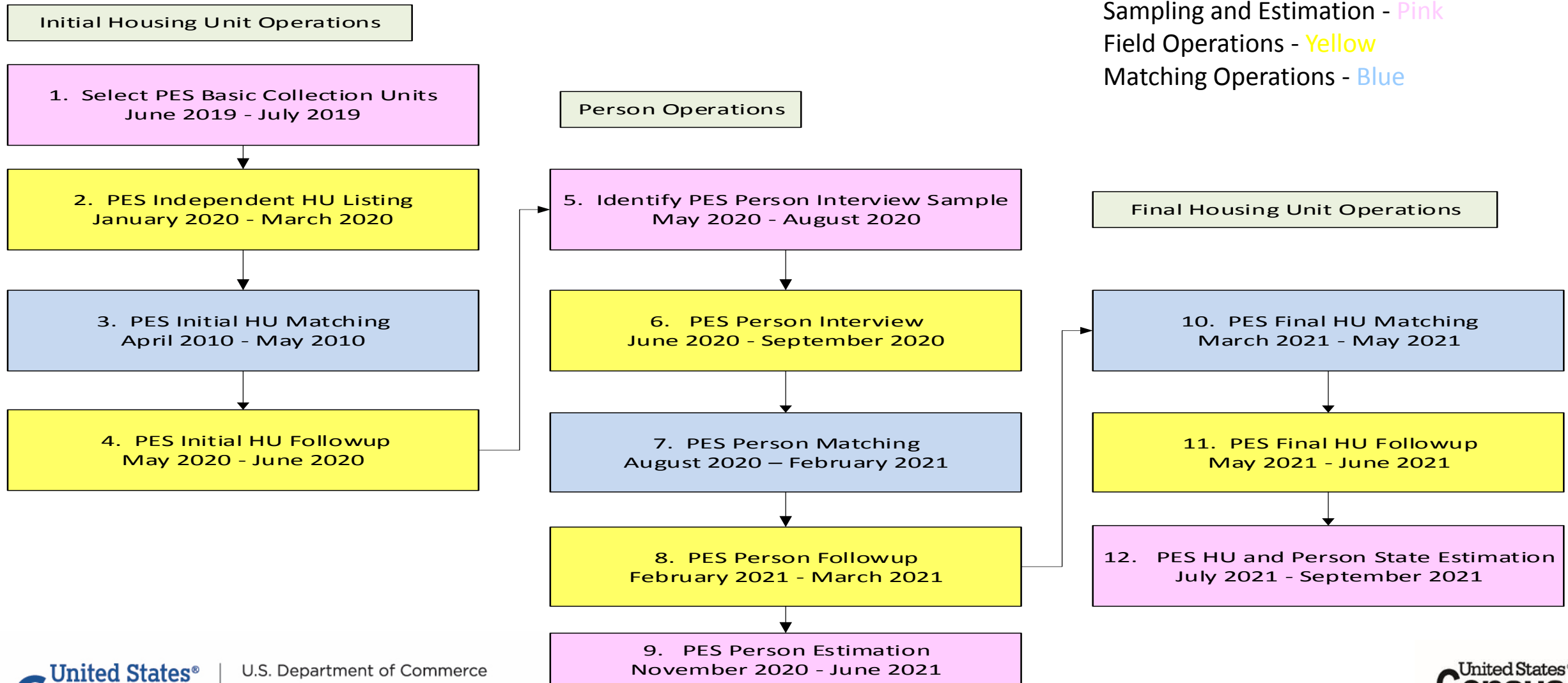
Post-Enumeration Survey (PES)

Plans for the 2020 PES

- Began planning for PES in January 2016
- Decided to leverage expertise of household survey infrastructure for the PES field operations in fall of 2017
- 2020 PES design
 - Similar to the design of the 2010 Census Coverage Measurement Survey
 - Similar analyses and estimates as the 2010 Post-Enumeration Survey

Post-Enumeration Survey (PES)

2020 PES-Flow and Dates of Major Operations



Post-Enumeration Survey (PES)

2020 PES-Core Systems

- Demographic Survey System (DSS)
 - Supports field operations and initial sample selection
- PES Clerical Matching and Map Update (PES CMMU)
 - Supports clerical matching and geocoding
- PES Processing and Control System (PES PCS)
 - Supports sampling, computer matching, data processing
- PES Imputation and Estimation (PES I&E)
 - Supports imputation, weighting, and modeling

Post-Enumeration Survey (PES)

Expected Sample Size

- First sample
 - Select 10,050 blocks in 50 states and District of Columbia
 - Select 400 blocks in Puerto Rico
- PES recapture listing
 - 541,000 housing units in 50 states and District of Columbia
 - 24,000 housing units in Puerto Rico
- After subsampling
 - 180,000 housing units in 50 states and District of Columbia
 - 8,000 housing units in Puerto Rico

Post-Enumeration Survey (PES)

Tentative Schedule

- June 2021
 - National estimates of net coverage of people
 - National estimates of components of coverage for people
- September 2021
 - State estimates of net coverage for people
 - State estimates of components of coverage for people
 - All housing unit coverage estimates

QUESTIONS?